The World's Work

WALTER H. PAGE, EDITOR

CONTENTS FOR JANUARY, 1913

The Rt. Hon. James Bryce - - - - - - - - - - - - *Frontispiece*

THE MARCH OF EVENTS—AN EDITORIAL INTERPRETATION - - - 243

Mr. A. A. Adee Justice John W. Goff Mrs. Carrie Chapman Catt

Looking the New Year in the Face
A Decent Hint to Business
A Little Look Backward
For a Reawakened Conservation
The New Freedom
The Insidious Bounty Idea
Turn Streams of Money on the Land
A Country School Fair
A Sensible Divorce Law
The Retraction of an Error

THE NEW FREEDOM - - - - - - - - - - - WOODROW WILSON 253
WHAT THE WORLD'S WORK IS TRYING TO DO WALTER H. PAGE 265
INVENTORS AND YOUR MONEY - - - - - - - - - - - - - - 268
A 100,000-ACRE BUSINESS - - - - - - - - THEODORE H. PRICE 271
THE BATTLE LINE OF LABOR III.—(Illustrated) SAMUEL P. ORTH 275
EXPLORING OTHER WORLDS II.—(Illus.) WILLIAM BAYARD HALE 286
TAXING THE COST OF LIVING - - - - - DAVID STARR JORDAN 302
THE TALKING TICKER - - - - - - - - - - - - - - - - - 311
THE WORLD RACE FOR THE RICH SOUTH AMERICAN TRADE
CHARLES LYON CHANDLER 314
WHY OUR CITIES WILL BURN UP (Illustrated) WALTER S. HIATT 322
THE ASSUAN DAM (Illustrated) - - - - - - M. E. J. CZARNOMSKA 332
THE GREAT MISSISSIPPI DAM (Illustrated) HARRY BRISTOL KIRKLAND 337
THE GRAND OLD MAN OF WISCONSIN FRANK PARKER STOCKBRIDGE 346
ADDISON BROADHURST, MASTER MERCHANT I.
EDWARD MOTT WOOLLEY 351
THE MARCH OF THE CITIES - - - - - - - - - - - - - - - 357
FORWARD TO THE LAND - - - - - - - - - - - - - - - - - 359

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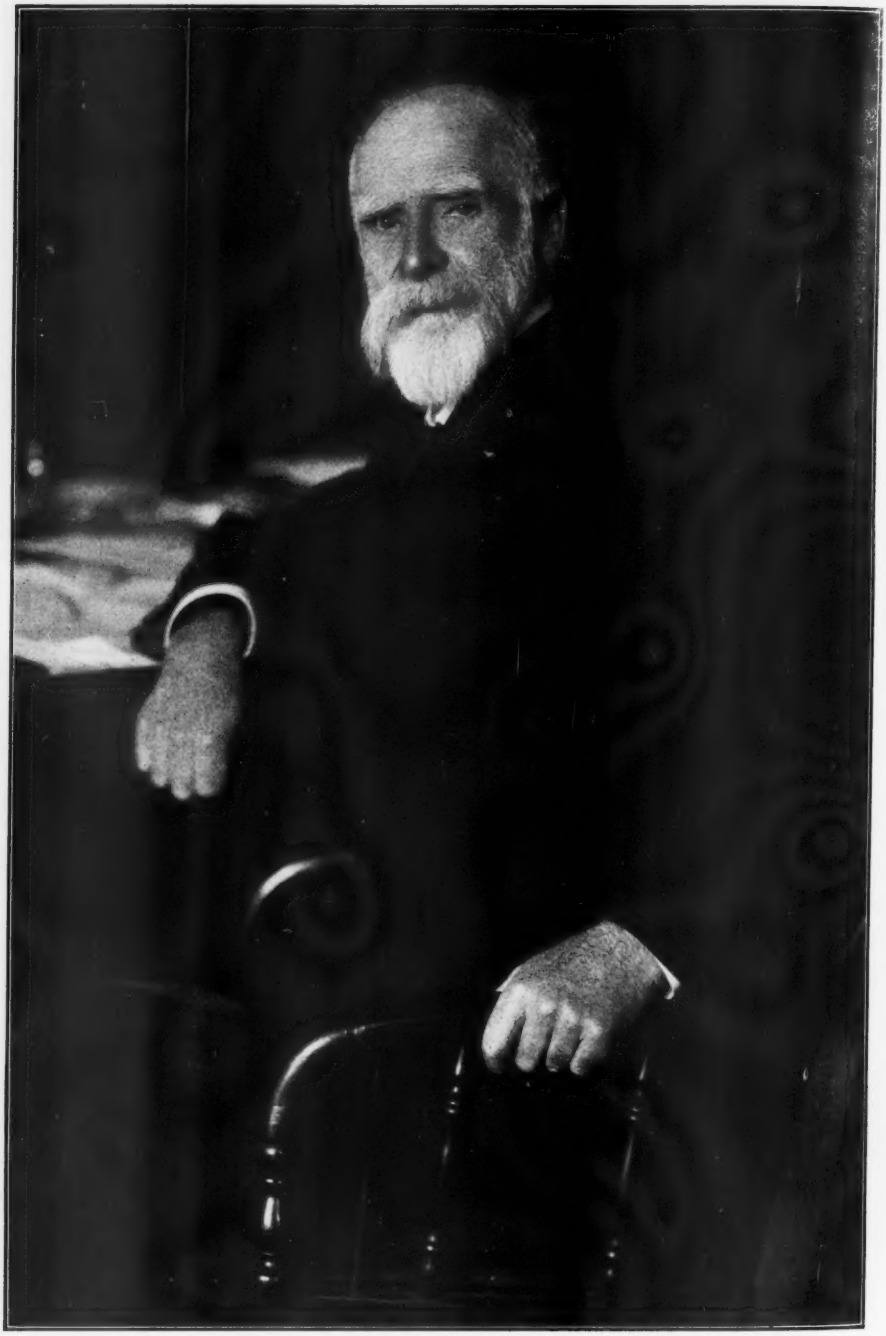

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THE RIGHT HON. JAMES BRYCE

THE RETIRING BRITISH AMBASSADOR, WHO GREATLY ENDEARED HIMSELF TO THE AMERICAN PEOPLE BY HIS ACUTE AND SYMPATHETIC ANALYSIS OF OUR POLITICAL INSTITUTIONS IN HIS "AMERICAN COMMONWEALTH" AND BY HIS RESIDENCE IN THIS COUNTRY

THE
WORLD'S WORK

JANUARY, 1913

VOLUME XXV NUMBER 3

THE MARCH OF EVENTS

WE MAY greet the New Year with good hope. The Presidential election was so decisive — Mr. Wilson could throw out every Southern state and still have a plurality in the Electoral College — that all governmental responsibility falls on the Democrats; and they will have a fair trial, under the leadership of a progressive man of conservative mind. And the election left no bitterness and little immediate fear. The tariff will be revised downward, but not so radically as to produce a panic in business. And business, if it be wise, will at once adjust itself to the change. This fundamental but long-delayed change in our policy has come — or is about to come — with little shock and after long preparation of the public mind.

And business conditions are sound. There are grave problems that face the people, such as the ever-rising cost of living, the necessity of a better currency system, the great task of organizing rural life and all its activities; but these take a long time and there are not likely to come any sudden crises in the meantime.

We are peculiarly blessed, in fact, that our life can go on smoothly, without fear of any sudden catastrophe such as periodically comes over Europe by reason of the danger of a great war. Our isolation is yet our great safety.

Still the world constantly becomes smaller and our connection with other countries constantly more intricate. See how the volume of international trade has leaped beyond all preceding records. See how we are involved in Central America. See how we have great commercial interests in Asia. See how even more intimate become our financial interests with Europe. As a people and as a nation we have no promise of continuous summer seas for our sailing; but our gravest problems and dangers are such as admit of time enough to solve them and to ward them off.

Of course, our primary tasks are yet domestic — the building up of our own people, the wise conservation of life and land, and the use of our institutions as flexible instruments of human progress.

Alike in our great public policies and in our individual tasks, there remains good reason for the cheerful spirit of self-confidence and the high hope that our foreign friends often ridicule us for, and receive our smiles for their pains.

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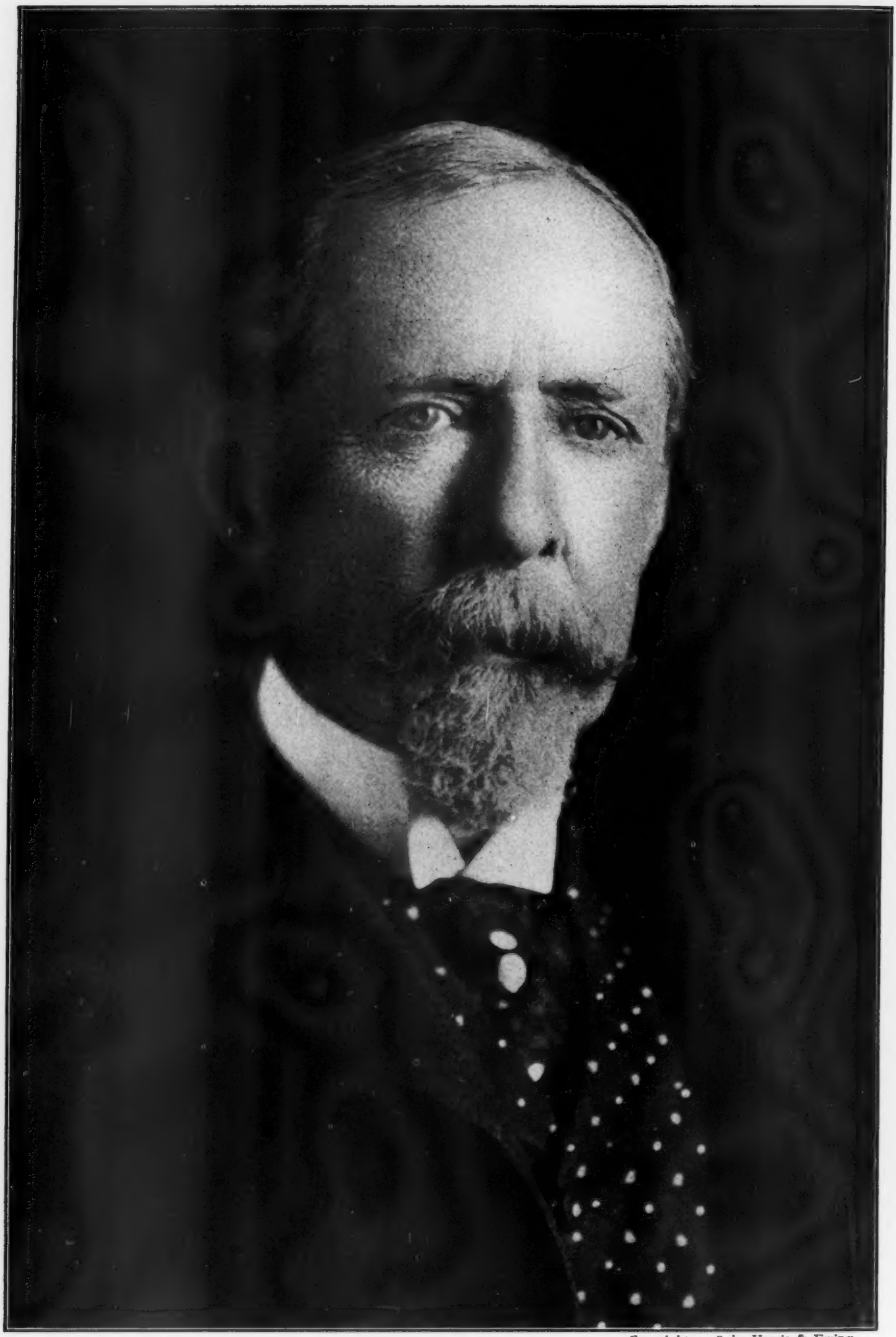

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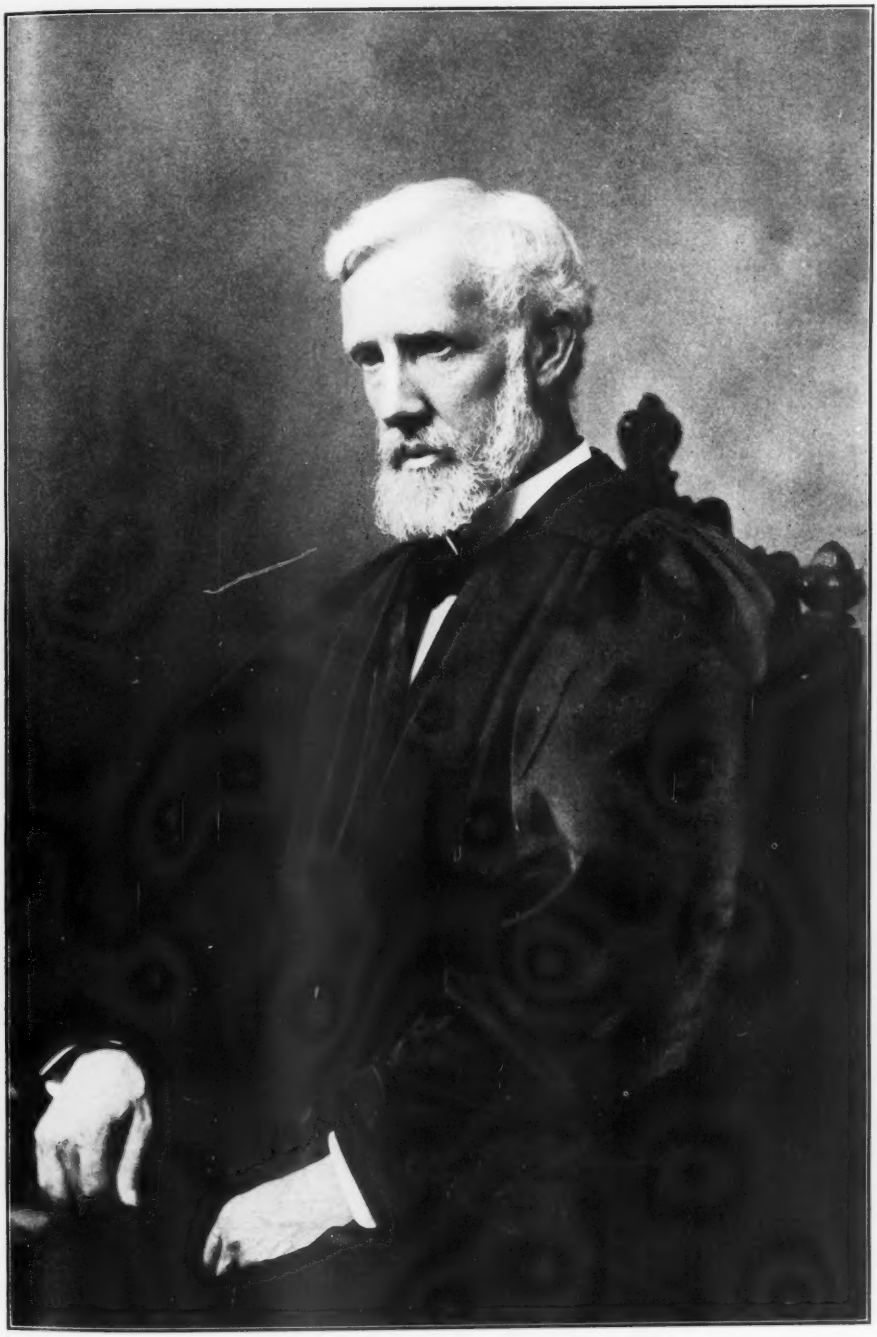
THE HON. A. A. ADEE

THE SECOND ASSISTANT SECRETARY OF STATE OF THE UNITED STATES, WHO RECENTLY CELEBRATED HIS SEVENTIETH BIRTHDAY AFTER THIRTY YEARS OF SERVICE AS THE OFFICER WHO BY HIS VAST KNOWLEDGE HAS MADE THE CONTINUITY OF THE FOREIGN POLICIES OF SEVEN SUCCESSIVE NATIONAL ADMINISTRATIONS



JUSTICE JOHN W. GOFF

OF THE SUPREME COURT OF NEW YORK, WHOSE EXPEDITIOUS AND DIGNIFIED HANDLING OF THE ROSENTHAL MURDER CASES AND OF THE HYDE TRIAL HAS DEMONSTRATED THAT THE CRIMINAL LAWS CAN BE JUSTLY AND QUICKLY ENFORCED WHEN THE PRESIDING JUDGE EXERTS THE POWERS WHICH ARE LODGED IN THE COURTS

A DECENT HINT TO BUSINESS

THE tariff will be reduced by Congress next summer. It is a little difficult to realize this, after so many threats and promises that have been deferred. But the people voted for a reduction two years ago at the Congressional election and again still more emphatically last fall; and the Democratic party and a Democratic President are pledged to this policy. Everybody knows that such a reduction is coming.

Now any such change will have an effect on certain kinds of business; but the effect of the coming changes can be greatly lessened by preparing for them in good time. It will probably be six months before Congress, in special session, can finish this business. Presumably the new law will not go into effect immediately. There are, therefore, surely six months, perhaps nine, and it may be twelve, before the changes will take place. That is good time to prepare for them.

To prepare for them is much safer and much more decent than to wait till they take effect and then to complain of them and thus to invite confusion and (perhaps in some kinds of business) even panic.

A LITTLE LOOK BACKWARD

FIVE years ago individuals owned and directed nearly all the country's greatest public servants, the railroads. There is no one in the railroad world now with such autocratic powers — for good and for evil — as Mr. Edward H. Harriman and Mr. J. J. Hill then exercised. Mr. Hill has retired. Mr. Harriman is dead. Even the great combination which he formed has been outlawed by the United States Supreme Court. The Sherman Law has proved itself effective again in dissolving monopolies and doing it without damaging any real values. The work of Mr. Harriman's genius in improving his roads and their credit has not been undone. His work in making a combination easily capable of restraining trade against public interest has been undone.

Five years ago the Standard Oil Company seemed invincible as a practical monopoly. Its monopolistic power has been reduced — without reducing its prosperity — and the way has been opened for the other oil companies to do business. This was done by law and did not "hurt business."

Five years ago, secret campaign funds were still a corrupting influence in politics. The new laws and the lessons of the Clapp Committee will end that.

Tariffs written secretly by a few people to insure profits to themselves at the public expense are in a fair way to be knocked out when the special session of Congress meets in April. The new freedom of business which Governor Wilson preaches may be helped by such a bill as that which Senator Williams has before the upper house of Congress.

The idea is this: The only rights which a corporation has are those which the state gives it when it grants its charter. It is proper enough for Maine or Delaware to give corporations any powers that they choose — to use in Maine or Delaware; but it is another matter for such states to create corporations with predatory powers to prey upon the rest of the country. Congress has the power of regulating commerce between the states and, therefore, corporations engaged in such commerce. The underlying scheme of Senator Williams's bill is to bar from interstate trade corporations whose charters give them the power to break the common law against the restraint of trade.

In this there is no destruction of real values, no interruption to business more than a reorganization which businesses undertake with little trouble when it seems profitable. It is a legal and sane way toward a greater freedom, toward more and better business. The signs are pointing toward better times and we are going faster than most of us realize.

FOR A REAWAKENED CONSERVATION

IN THE coming change in the Government the enemies of conservation think that they see an opportunity to change the policy of the last twelve years and to break down conservation

as undertaken by the National Government. They will attack the whole conservation movement on the partisan political ground that it is a Roosevelt movement — with very short-sighted knowledge; for the first national forests (then called Forest Reserves) were created by President Cleveland; the Reclamation Service was fathered by Senator Newlands, a Democrat, and the better use of our rivers is particularly appealing to Democratic sections of the country.

Closely akin to the partisan attack is one based upon a so-called "states' rights" theory which argues that the states should own the national forests within their borders. This, too, is without historical warrant. The Government's general policy has not been to give the public domain to the different states. The public policy of the Homestead Act, accepted by both parties, was to get the public domain into the hands of individual users, not for speculation, but for home-building, not to enrich a few people, nor a state government, but to serve the nation. That is the purpose of the whole conservation policy. Only the National Government can carry out such a policy, because Nature did not foresee the political state lines and the forested watersheds, and the rivers do not lie within one state's limits.

This ground has all been gone over before and the majority of people, Democrats and Republicans alike, have time and again approved it, and the Democrats will make a grave error if Congress should take a step backward.

II

There are, however, two serious problems in the working out of the conservation policy: The first is the management of the great irrigation enterprises upon which the arid West puts its hope of becoming populous and prosperous. Some of these projects are developed by private capital. As in every other sort of enterprise, some of these are sound, some are unsound through ignorance, and some through dishonesty. The number of unsound private irrigation projects is alarming.

Then there are the projects in which private enterprise and the state governments coöperate under the terms of the Carey Act, and too large a proportion of these projects are in a precarious condition.

Thirdly, there are the projects of the United States Reclamation Service. The dams are well constructed but the Government has no means, so far, of properly securing settlers. It has no agency to sell its lands, as the private companies have, nor can it discriminate between applicants. It must take the bad with the good, those that are certain to fail with those that are likely to succeed. The Reclamation Service has no power properly to settle the lands that it has watered, nor has the Land Office or anybody else. Their settlement, therefore, goes on in a harum-scarum way or does not go on at all. The private irrigation companies, on the other hand, find it wise to pick and choose their settlers, and perhaps a third of their expense is for settlement. Added to this handicap, in common with all other construction work of the time, the Government's irrigating works cost more than the estimates. Moreover, the elemental injustice of treating everybody alike (able-bodied men with money and struggling widows without it) creates protests.

Time of course will settle this problem, but there is a tremendous task before the Western people, the states, and the Federal Government to clean up the present difficulties and prevent a temporary retrogression.

But greater than this arid land problem and almost untouched is the control of our rivers. The richest soil of the United States is in the most backward regions. There can be no real progress in the lower Mississippi Valley until the floods are controlled. In Egypt the Nile, controlled, has made a nation. Here, the Mississippi, with its periodic floods, has held back civilization upon the richest part of all our rich heritage. We have frittered away millions upon useless waterway improvements for "pork barrel" purposes, but our problem still remains. A great constructive task, far greater than all that the reclamation movement has so bravely accomplished, still confronts us — the con-

MRS. CARRIE CHAPMAN CATT

RECENTLY RETURNED FROM A TRIP AROUND THE WORLD IN THE INTEREST OF THE "WOMAN'S MOVEMENT" WHICH, SHE SAYS, IS DEEPLY STIRRING EVERY COUNTRY ON EARTH, INCLUDING ESPECIALLY INDIA, CHINA, AND THE PHILIPPINE ISLANDS

trol of our rivers, and the conquering and using of their rich valleys.

But to come back — the fact that every man who knows our country and the great physical problems that underlie our future well-being and who looks before and after — the fact that every such man should now face is the probability of a partisan attack on the whole conservation policy; and every legitimate influence should be brought to bear to sustain it. It is not a partisan policy. It is a fundamental, physical necessity. And the Democrats who attack it have no surer way to bring their party into disrepute and to spoil its chance of a long lease of power.

THE NEW FREEDOM

ALL political philosophies that are workable in a republic sound much alike in the general formulation of things because they all are predicated on the dogma of the rule of the people. There is nevertheless a pole-wide difference between the Republican party's idea dominant during this last generation and the Democratic idea as held by Woodrow Wilson.

His political philosophy receives its definite minded statement in the articles that with this issue begin in this magazine which are chapters of his forthcoming book "The New Freedom." This presentation has the advantage, as we look at it (however Mr. Wilson may himself regard it), of being cast somewhat in his spoken style. He has said these things, some here, some there; and they are put in logical sequence and welded together, making his expression of his political creed always in an emphatic and sometimes in an impassioned style.

Subsequent chapters will be on more definite aspects of "The New Freedom" and will discuss questions of monopolies, particularly the monopoly of opportunity; the tariff and other special privileges; and the overthrow of the bosses who deal in them. Through it all runs his fundamental philosophy that the public business should be done in the open.

THE INSIDIOUS BOUNTY IDEA

OUGHT the Federal Government to give money out of its treasury to build roads, to conduct schools, and to conduct the people's farms?

So successfully has the farmer vote been "played up" that we are in grave danger of two of those projects. It is a proper function of the Government to maintain a road-laboratory and to have a certain number of engineers to show any community how it may best construct its roads out of the most easily accessible material. It is a proper function of the Government to maintain a Bureau of Education which gives information about schools, school-houses, school-methods, and such like subjects. It is a proper function of the Government to maintain a farm-demonstration service which shall show a farmer in a neighborhood how he may improve his methods. All these things the Government now does. But it does not give money to build roads, nor to build schools, nor to maintain them (except certain old land-grants) nor does it cultivate the farmer's farm for him.

But there are bills in Congress to authorize the giving of unlimited millions to help road-building, in conjunction with the state and county authorities. So also there are bills to appropriate increasing sums to the agricultural colleges and other schools to help their good work forward. One such is the Page bill. Another such is the Lever-Smith bill. One of these has passed the Senate and the other has passed the House; and the friends of each hope to enact one or the other during this session of Congress.

In a word, the farmer is a name to conjure with. So is education. Put the two together and an irresistible appeal can be made to the benevolent Congressman who imagines that the giving of money will educate the farmer. It is a greatly mistaken benevolence. This is the latest, the subtlest, and the farthest-reaching result of the bounty theory of government.

Already many of the agricultural schools are organized to secure this legislation, forgetful that if this bounty comes to them the result will be to demoralize the

very people whom they are eager to serve. The educational progress of the people is now in every way sound. If it seem slow, it is more rapid than it ever was before. And the advance is normal and wholesome. It would be a grave mistake by too impatient, "good," benevolent men to commit the already overburdened General Government to a vast and increasing educational gratuity.

In effect it would be to put the farmer and the teacher on a Federal pension roll.

TURN STREAMS OF MONEY ON THE LAND

THE turning of a stream of money on the soil, wisely directed to productive uses, of course — that is the next great financial task in the sound economic development of the United States. We have used money to build railroads, to build cities, with sewers and parks and such necessary things; and all these are tasks, of course, which never end. But hitherto it has, as a rule, been the town that has had the beneficial uses of capital; for the town has been organized to procure it, to pay for it, and to use it wisely. The town *is* organization; it is this which distinguishes it from the country.

But now the great business that needs organization most, that can now pay for it and profit by it, is the business of bringing the land under more scientific culture and the business of organizing farm life. It has lagged for lack of money, and it has not known how to get it nor, perhaps, how to use it wisely. But conditions are fast changing. The farmer is become aware of his difficulty, of his handicap; and in most good farming communities there are now men who are capable of productively using money.

Speaking broadly, there is hardly an available acre in the United States that could not be made richly to repay the investment of more money to increase its productiveness and to reduce the culture of it to a business basis.

II

How can our capital be safely put there as it has hitherto been put, let us say, into railroads and such things? Mortgages can by several devices be put into "liquid" form — debentures issued on them which become part of the securities that investors buy, as the *Landschaften* in Germany. A somewhat different form of doing a similar thing is the *Credit Foncier* of France, which, however, has a form of government aid. These are improvements over our rough and costly mortgage loans in the United States, because under them money costs the farmer less.

Then there are the Raiffeisen credit societies which, starting in Germany somewhat more than half a century ago, have overrun all continental Europe, except Russia, and made their way into Ireland and even into India, working the miracle not only of putting cheap money within the farmer's reach but also of teaching him to use it wisely. It is the greatest school of financial management ever set up for the small countryman.

All these systems are under study and discussion as few such subjects have ever been in our economic life; and this attention to them shows that we are waking up to the necessity of financing the farm.

III

But this is not all, nor the greatest benefit of getting money on the land. If hundreds of millions of dollars could so be invested (and there is a pressing demand for farm-capital everywhere), this money would not only yield profit where profit is most needed and strengthen our whole economic structure where it is weakest, but our surplus millions could not then flow within the reach of our so-called money-trust, or credit-trust. The domination of a large part of the credit of the people by a few strong men and a few great interests, which is the inevitable and necessary result of our present system and habits, would cease. The money of the people would be on the land of the people, making every acre richer and more productive and more profitable. It would be at the bottom, where money ought to be — where it can lift most.

In a word, so fast as we set free the man in our fields, we set men free elsewhere also; and this is one of the qualities of

economic freedom. Every move to work out this problem is a move for the fundamental betterment of American life.

A COUNTRY SCHOOL FAIR

THE country school is coming to its own, one here, one there; one in one way, and one in another way For example: In Leesburg, Va., the Loudoun County schools late last fall held a fair. Such county school fairs have come to be an important element of our rural school work. By 10 o'clock in the morning the streets were a surging throng of school children, their parents, and their friends from all parts of the county. And they were still coming in, by trolley, in school wagons, in large farm wagons bedded with straw, on horseback, in automobiles, and in buggies. By 11 o'clock it was estimated that there were more people in Leesburg than had ever before been drawn to that town and they had come at the call of the child.

The exhibits were competitive and were open to all the schools of the county. The printed catalogue of the school fair gave a definite score card for every exhibit in the schedule and a list of the prizes to be awarded. To illustrate the scope of activities: In the boys' corn club prize list there were twenty-two prizes offered for the largest yield per acre, for the seventy bushels or more per acre at least cost, for the best ten ears, for the best ear, the best letter and report of the work. In shop work, prizes were offered for the best set of book shelves, the best axe handle, the best wooden sled, the best set of garden tools, the best bird-house. In the arts of the home, the girls competed for prizes given for the best pound of butter, the best cake, the best loaf of bread, the best glass of apple jelly, for the best work in making buttonholes, for dressing a doll, for embroidering a belt and collar, for putting a patch on striped material. There was competition in cut flowers, wild flowers, and native woods. There were compositions, maps, and exhibits of drawing. During the morning there was a contest in spelling and arithmetic at the Leesburg high school.

The exhibit halls could accommodate but a small part of the crowd at any one time; to provide for the overflow, a band played all morning at the court house and a school orchestra gave a concert at the opera house.

In the early afternoon came the school parade. It was formed on the grounds of the court house and traversed the main streets of the town. Every school had its colors, its banners, its school songs and yells. You never saw a finer display of youthful enthusiasm on an athletic field. The parade ended at the opera house, where Governor Mann and State Superintendent Eggleston talked to the people in the interest of better roads, better schools, better farming.

The day closed with the awarding of the prizes from the court house steps. There was a brief recital of the educational work of Jefferson and of Lee; and these two sons of the Commonwealth were held up before the assembled schools as examples of patriotism and devoted citizenship. Then came the climax of the day's display of school spirit with the awarding of the long list of prizes. The name of every winner was greeted with an outburst of applause by his friends and a yell by his school.

These throngs of men and women and children had come from their farms, their schools, their banks, their business, to join in the celebration of a common interest. For this one day town and country had been one; in the presence of the child, neighborhood differences and party strifes had been forgotten; and out of it all there had come a quickened sense of the common task, a larger vision of the opportunities and responsibilities of men for the country school and a better knowledge of the sorts of service it may render.

A SENSIBLE DIVORCE LAW

IN NOVEMBER, 1909, the late King Edward of England appointed a Royal Commission on Divorce and Matrimonial Causes. The Commissioners were chosen from the most distinguished men and women of Great Britain. The report of the Commission was made public after the examination of 246 witnesses and after

seventy-one sittings. A minority report was signed by the Archbishop of York and two others. The women signed the majority report.

This report of the majority sweeps aside the traditional English theory that marriage is solely a religious covenant and adopts whole-heartedly the view that marriage is a legal contract so far as the parties to it are concerned and a social covenant so far as Society is concerned. Applying this view, it recommends a wide extension of the grounds of divorce to accommodate the marriage relation to the known human tendencies that affect personal morals and the public good. These grounds are as follows:

(1) Adultery.
(2) Desertion for three years and upward.
(3) Cruelty.
(4) Incurable insanity, after five years' confinement.
(5) Habitual drunkenness, found incurable after three years from a first order of separation.
(6) Imprisonment under a commuted death sentence.

It is an old injustice of the English law that it requires all complainants in divorce causes to present their case before a court in London. This law has made divorce an impossibility to the poor and to most persons of ordinary income whose residence was outside London; and the denial of divorce under many common conditions has undoubtedly tended to lower the standard of public morals. One recommendation of the Commission is that divorce courts be held in all parts of the country to hear cases in which the joint income of the husband and wife does not exceed $1,500 and their property does not exceed $1,000 in value.

The Commission unanimously recommends that these courts be empowered to declare marriages null for the following reasons:

(1) Unsound mind.
(2) Epilepsy and recurrent insanity.
(3) Specific disease.
(4) When a woman is in a condition which renders marriage a fraud upon the husband.
(5) Wilful refusal to perform the duties of marriage.

These recommendations, both of grounds for divorce and of grounds for nullifying marriage, are probably as good a statement as can be made of the most enlightened modern opinion. They recognize the limitations of human nature and would probably encourage morality. It is interesting to note that the majority report proceeds upon the assumption that to promote morality and to conserve human happiness was the Commission's primary duty.

Another unanimous recommendation of the Commission is that restrictions be placed upon the publication of reports of divorce cases, even to a permanent prohibition of publication of portions of the evidence at the discretion of the judge; that no newspaper accounts of the proceedings be permitted until after the case is closed; and that the printing of pictures of the parties to a divorce suit be prohibited.

A study of the Commission's report is useful for this reason: it might well form a basis for the propaganda of those social reformers who propose a uniform divorce law for the United States. The recommendations are a rational mean between the conservatism of the laws of New York and of the laxity of the laws of Nevada; and public opinion could probably be united in all the states upon a programme so sane and moderate as this.

THE RETRACTION OF AN ERROR

IN AN article in the WORLD'S WORK for May, 1912, entitled "What the Dictograph Is," the following sentence appeared: "In October, 1911, the dictograph procured the conviction of Mayor Thomas E. Knotts, of Gary, Ind., on a charge of receiving a bribe of $5,000."

Of course, this sentence was published in good faith and wholly without malice. Its publication was incidental to a description of the various purposes of which the dictograph had been utilized. The editors of the WORLD'S WORK now learn that this statement was not correct They greatly regret that this injustice has been done to Mr. Knotts, and gladly make amends by publishing this correction of the unfortunate error, in the same conspicuous way in which the original statement was published.

THE NEW FREEDOM

A CALL FOR THE EMANCIPATION OF THE GENEROUS ENERGIES OF A PEOPLE

BY

WOODROW WILSON

I

THE OLD ORDER CHANGETH

THERE is one great basic fact which underlies all the questions that are discussed on the political platform at the present moment. That singular fact is that nothing is done in this country as it was done twenty years ago.

We are in the presence of a new organization of society. Our life has broken away from the past. The life of America is not the life that it was twenty years ago; it is not the life that it was ten years ago. We have changed our economic conditions, absolutely, from top to bottom; and, with our economic society, the organization of our life. The old political formulas do not fit the present problems; they read now like documents taken out of a forgotten age. The older cries sound as if they belonged to a past age which men have almost forgotten. Things which used to be put into the party platforms of ten years ago would sound antiquated if put into a platform now. We are facing the necessity of fitting a new social organization, as we did once fit the old organization, to the happiness and prosperity of the great body of citizens; for we are conscious that the new order of society has not been made to fit and provide the convenience or prosperity of the average man. The life of the nation has grown infinitely varied. It does not centre now upon questions of governmental structure or of the distribution of governmental powers. It centres upon questions of the very structure and operation of society itself, of which government is only the instrument. Our development has run so fast and so far along the line sketched in the earlier day of constitutional definition, has so crossed and interlaced those lines, has piled upon them

such novel structures of trust and combination, has elaborated within them a life so manifold, so full of forces which transcend the boundaries of the country itself and fill the eyes of the world, that a new nation seems to have been created which the old formulas do not fit or afford a vital interpretation of.

We have come upon a very different age from any that preceded us. We have come upon an age when we do not do business in the way in which we used to do business — when we do not carry on any of the operations of manufacture, sale, transportation, or communication as men used to carry them on. There is a sense in which in our day the individual has been submerged. In most parts of our country men work for themselves, not as partners in the old way in which they used to work, but as employees — in a higher or lower grade — of great corporations. There was a time when corporations played a very minor part in our business affairs, but now they play the chief part, and most men are the servants of corporations.

You know what happens when you are the servant of a corporation. You have in no instance access to the men who are really determining the policy of the corporation. If the corporation is doing the things that it ought not to do, you really have no voice in the matter and must obey the orders, and you have with deep mortification to cooperate in the doing of things which you know are against the public interest. Your individuality is swallowed up in the individuality and purpose of a great organization.

It is true that, while most men are thus submerged in the corporation, a few, a very few, are exalted to power which as individuals they could never have wielded. Through the great organizations of which they are the heads, a few are enabled to play a part unprecedented by anything in history in the control of the business operations of the country and in the determination of the happiness of great numbers of people.

Yesterday, and ever since history began, men were related to one another as individuals. To be sure there were the family, the Church, and the State, institutions which associated men in certain limited circles of relationships. But in the ordinary concerns of life, in the ordinary work, in the daily round, men dealt freely and directly with one another. To-day, the everyday relationships of men are largely with great impersonal concerns, with organizations, not with other individual men.

Now this is nothing short of a new social age, a new era of human relationships, a new stage-setting for the drama of life.

In this new age we find, for instance, that our laws with regard to the relations of employer and employee are in many respects wholly antiquated and impossible. They were framed for another age, which nobody now living remembers, which is, indeed, so remote from our life that it would be difficult for many of us to understand it if it were described to us. The employer is now generally a corporation or a huge company of some kind; the employee is one of hundreds or of thousands brought together, not by individual masters whom they know and with whom they have personal relations, but by agents of one sort or another. Workingmen are marshaled in great numbers for the performance of a multitude of particular tasks under a common discipline. They generally use dangerous and powerful machinery, over whose repair and renewal they have no control. New rules must be devised with regard to their obligations and their rights, their obligations to their employers and their responsibilities to one another. New rules must be devised for their protection, for their compensation when injured, for their support when disabled.

There is something very new and very big and very complex about these new relations of capital and labor. A new economic society has sprung up, and we must effect a new set of adjustments. We must not pit power against weakness. The employer is generally, in our day, as I have said, not an individual, but a powerful group; and yet the workingman when dealing with his employer is still, under our existing law, an individual.

Why is it that we have a labor question at all? It is for the simple and very sufficient reason that the laboring man and the employer are not intimate associates now, as they used to be in time past. Most of our laws were formed in the age when employer and employees knew each other, knew each other's characters, were associates with each other, dealt with each other as man with man. That is no longer the case. You not only do not come into personal contact with the men who have the supreme command in those corporations, but it would be out of the question for you to do it. Our modern corporations employ thousands, and in some instances hundreds of thousands, of men. The only persons whom you see or deal with are local superintendents or local representatives of a vast organization, which is not like anything that the workingmen of the time in which our laws were framed knew anything about. A little group of workingmen, seeing their employer every day, dealing with him in a personal way, is one thing, and the modern body of labor engaged as employees of the huge enterprises that spread all over the country, dealing with men of

whom they can form no personal conception, is another thing. A very different thing. You never saw a corporation, any more than you ever saw a government. Many a workingman to-day never saw the body of men who are conducting the industry in which he is employed. And they never saw him. What they know about him is written in ledgers and books and letters, in the correspondence of the office, in the reports of the superintendents. He is a long way off from them.

So what we have to discuss is, not wrongs which individuals intentionally do — I do not believe there are a great many of those — but the wrongs of the system. I want to record my protest against any discussion of this matter which would seem to indicate that there are bodies of our fellow-citizens who are trying to grind us down and do us injustice. There are some men of that sort. I don't know how they sleep o'nights, but there are men of that kind. Thank God they are not numerous. The truth is, we are all caught in a great economic system which is heartless. The modern corporation is not engaged in business as an individual. When we deal with it we deal with an impersonal element, a material piece of society. A modern corporation is a means of coöperation in the conduct of an enterprise which is so big that no one man can conduct it, and which the resources of no one man are sufficient to finance. A company is formed; that company puts out a prospectus; the promoters expect to raise a certain fund as capital stock. Well, how are they going to raise it? They are going to raise it from the public in general, some of whom will buy their stock. The moment that begins, there is formed — what? A joint stock corporation. Men begin to pool their earnings, little piles, big piles. A certain number of men are elected by the stockholders to be directors, and these directors elect a president. This president is the head of the undertaking, and the directors are its managers.

Now, do the workingmen employed by that stock corporation deal with that president and those directors? Not at all. Does the public deal with that president and that board of directors? It does not. Can anybody bring them to account? It is next to impossible to do so. If you undertake it you will find it a game of hide and seek, with the objects of your search taking refuge now behind the tree of their individual personality, now behind that of their corporate irresponsibility.

And do our laws take note of this curious state of things? Do they even attempt to distinguish between a man's act as a corporation director and as an individual? They do not. Our laws still deal with us on the basis of the old system. The law is still living in the dead

past which we have left behind. This is evident, for instance, with regard to the matter of employers' liability for workingmen's injuries. Suppose that a superintendent wants a workman to use a certain piece of machinery which it is not safe for him to use, and that the workman is injured by that piece of machinery. Our courts have held that the superintendent is a fellow-servant, or, as the law states it, a fellow-employee, and that, therefore, the man cannot recover damages for his injury. The superintendent who probably engaged the man is not his employer. Who is his employer? And whose negligence could conceivably come in there? The board of directors did not tell the employee to use that piece of machinery; and the president of the corporation did not tell him to use that piece of machinery. And so forth. Don't you see by that theory that a man never can get redress for negligence on the part of the employer? When I hear judges reason upon the analogy of the relationships that used to exist between workmen and their employers a generation ago, I wonder if they have not opened their eyes to the modern world. You know, we have a right to expect that judges will have their eyes open, even though the law which they administer hasn't awakened.

Yet that is but a single small detail illustrative of the difficulties we are in because we have not adjusted the law to the facts of the new order.

Since I entered politics, I have chiefly had men's views confided to me privately. Some of the biggest men in the United States, in the field of commerce and manufacture, are afraid of somebody, are afraid of something. They know that there is a power somewhere so organized, so subtle, so watchful, so interlocked, so complete, so pervasive, that they had better not speak above their breath when they speak in condemnation of it.

They know that America is not a place of which it can be said, as it used to be, that a man may choose his own calling and pursue it just so far as his abilities enable him to pursue it; because to-day, if he enters certain fields, there are organizations which will use means against him that will prevent his building up a business which they do not want to have built up; organizations that will see to it that the ground is cut from under him and the markets shut against him. For if he begins to sell to certain retail dealers, to any retail dealers, the monopoly will refuse to sell to those dealers, and those dealers will be afraid and will not buy the new man's wares.

And this is the country which has lifted to the admiration of the world its ideals of absolutely free opportunity, where no man is sup-

posed to be under any limitation except the limitations of his character and of his mind; where there is supposed to be no distinction of class, no distinction of blood, no distinction of social status, but where men win or lose on their merits.

I lay it very close to my own conscience as a public man whether we can any longer stand at our doors and welcome all newcomers upon those terms. American industry is not free, as once it was free; American enterprise is not free; the man with only a little capital is finding it harder to get into the field, more and more impossible to compete with the big fellow. Why? Because the laws of this country do not prevent the strong from crushing the weak. That is the reason, and because the strong have crushed the weak, the strong dominate the industry and the economic life of this country. No man can deny that the lines of endeavor have more and more narrowed and stiffened; no man who knows anything about the development of industry in this country can have failed to observe that the larger kinds of credit are more and more difficult to obtain, unless you obtain them upon the terms of uniting your efforts with those who already control the industries of the country; and nobody can fail to observe that any man who tries to set himself up in competition with any process of manufacture which has been taken under the control of large combinations of capital will presently find himself either squeezed out or obliged to sell and allow himself to be absorbed.

There is a great deal that needs reconstruction in the United States. I should like to take a census of the business men — I mean the rank and file of the business men — as to whether they think that business conditions in this country, or rather whether the organization of business in this country, is satisfactory or not. I know what they would say if they dared. If they could vote secretly they would vote overwhelmingly that the present organization of business was meant for the big fellows and was not meant for the little fellows; that it was meant for those who are at the top and was meant to exclude those who are at the bottom; that it was meant to shut out beginners, to prevent new entries in the race, to prevent the building up of competitive enterprise that would interfere with the monopolies which the great trusts have built up.

What this country needs above everything else is a body of laws which will look after the men who are on the make rather than the men who are already made. Because the men who are already made are not going to live indefinitely, and they are not always kind enough to leave sons as able and as honest as they are.

The originative part of America, the part of America that makes new enterprises, the part into which the ambitious and gifted workingman makes his way up, the class that saves, that plans, that organizes, that presently spreads its enterprises until they have a national scope and character — that middle class is being more and more squeezed out by the processes which we have been taught to call processes of prosperity. Its members are sharing prosperity, no doubt; but what alarms me is that they are not *originating* prosperity. No country can afford to have its prosperity originated by a small controlling class. The treasury of America does not lie in the brains of the small body of men now in control of the great enterprises that have been concentrated under the direction of a very small number of persons. The treasury of America lies in those ambitions, those energies, that cannot be restricted to a special favored class. It depends upon the inventions of unknown men, upon the originations of unknown men, upon the ambitions of unknown men. Every country is renewed out of the ranks of the unknown, not out of the ranks of those already famous and powerful and in control.

There has come over the land that un-American set of conditions which enables a small number of men who control the Government to get favors from the Government; by those favors to exclude their fellows from equal business opportunity; by those favors to extend a network of control that will presently drive every industry in the country, and so make men forget the ancient time when America lay in every hamlet, when America was to be seen on every fair valley, when America displayed her great forces on the broad prairies, ran her fine fires of enterprise up over the mountain sides and down into the bowels of the earth, and eager men were everywhere captains of industry, not employees; not looking to a distant city to find out what they might do, but looking about among their neighbors, finding credit according to their character, not according to their connections, finding credit in proportion to what was known to be in them and behind them, not in proportion to the securities they held that were approved where they were not known. In order to start an enterprise now, you have to be authenticated, in a perfectly impersonal way, not according to yourself, but according to what you own that somebody else approves of your owning. You cannot begin such an enterprise as those that have made America until you are so authenticated, until you have succeeded in obtaining the good-will of large allied capitalists. Is that freedom? That is dependence, not freedom.

We used to think in the old-fashioned days when life was very

simple that all that government had to do was to put on a policeman's uniform, and say, "Now don't anybody hurt anybody else." We used to say that the ideal of government was for every man to be left alone and not interfered with, except when he interfered with somebody else; and that the best government was the government that did as little governing as possible. That was the idea that obtained in Jefferson's time. But we are coming now to realize that life is so complicated that we are not dealing with the old conditions, and that the law has to step in and create the conditions under which we live, the conditions which will make it tolerable for us to live.

Let me illustrate what I mean: It used to be true in our cities that every family occupied a separate house of its own, that every family had its own little premises, that every family was separated in its life from every other family. That is no longer the case in our great cities. Families live in tenements, they live in flats, they live on floors; they are piled layer upon layer in the great tenement houses of our crowded districts, and not only are they piled layer upon layer, but they are associated room by room, so that there is in every room, sometimes, in our congested districts, a separate family. In some foreign countries they have made much more progress than we in handling these things. In the city of Glasgow, for example (Glasgow is one of the model cities of the world), they have made up their minds that the entries and the hallways of great tenements are public streets. Therefore, the policeman goes up the stairway, and patrols the corridors; the lighting department of the city sees to it that the halls are abundantly lighted. The city does not deceive itself into supposing that that great building is a unit from which the police are to keep out and the civic authority to be excluded, but it says: "These are public highways, and light is needed in them, and control by the authority of the city."

I liken that to our great modern industrial enterprises. A corporation is very like a large tenement house; it isn't the premises of a single commercial family; it is just as much a public affair as a tenement house is a network of public highways.

When you offer the securities of a great corporation to anybody who wishes to purchase them, you must open that corporation to the inspection of everybody who wants to purchase. There must, to follow out the figure of the tenement house, be lights along the corridors, there must be police patrolling the openings, there must be inspection wherever it is known that men may be deceived with regard to the contents of the premises. If we believe that fraud

lies in wait for us, we must have the means of determining whether our suspicions are well founded or not. Similarly, the treatment of labor by the great corporations is not what it was in Jefferson's time. Whenever bodies of men employ bodies of men, it ceases to be a private relationship. So that when courts hold that workingmen can not peaceably dissuade other workingmen from taking employment, and base the decision upon the analogy of domestic servants, they simply show that their minds and understandings are lingering in an age which has passed away. This dealing of great bodies of men with other bodies of men is a matter of public scrutiny, and should be a matter of public regulation.

Similarly, it was no business of the law in the time of Jefferson to come into my house and see how I kept house. But when my house, when my so-called private property, became a great mine, and men went along dark corridors amidst every kind of danger in order to dig out of the bowels of the earth things necessary for the industries of a whole nation, and when it came about that no individual owned these mines, that they were owned by great stock companies, then all the old analogies absolutely collapsed, and it became the right of the government to go down into these mines to see whether human beings were properly treated in them or not; to see whether accidents were properly safeguarded against; to see whether modern economical methods of using these inestimable riches of the earth were followed or were not followed. If somebody puts a derrick improperly secured on top of a building or overtopping the street, then the government of the city has the right to see that that derrick is so secured that you and I can walk under it and not be afraid that the heavens are going to fall on us. Likewise in these great beehives where in every corridor swarm men of flesh and blood, it is the privilege of the government, whether of the state or of the United States, as the case may be, to see that human life is properly cared for, and that human lungs have something to breathe.

These, again, are merely illustrations of conditions. We are in a new world struggling under old laws. As we go inspecting our lives to-day, surveying this new scene of centralized and complex society, we shall find many more things out of joint.

One of the most alarming phenomena of the time — or rather it would be alarming if the Nation had not awakened to it and shown its determination to control it — one of the most significant signs of the new social era is the degree to which government has become associated with business. I speak, for the moment, of the control

over the Government exercised by Big Business. Behind the whole subject, of course, is the truth that, in the new order, government and business must be associated, closely. But that association is, at present, of a nature absolutely intolerable; the precedence is wrong, the association is upside down. Our Government has been for the past few years under the control of heads of great allied corporations with special interests. It has not controlled these interests and assigned them a proper place in the whole system of business; it has submitted itself to their control. As a result, there have grown up vicious systems and schemes of governmental favoritism (the most obvious being the extravagant tariff), far-reaching in effect upon the whole fabric of life, touching to his injury every inhabitant of the land, laying unfair and impossible handicaps upon competitors, imposing taxes in every direction, stifling everywhere the free spirit of American enterprise.

Now this has come about naturally; as we go on, we shall see how very naturally. It is no use denouncing anybody, or anything, except human nature. Nevertheless, it is an intolerable thing that the government of the Republic should have got so far out of the hands of the people; should have been captured by interests which are special and not general. In the train of this capture follow the troops of scandals, wrongs, indecencies, with which our politics swarm.

There are cities in America of whose government we are ashamed. There are cities everywhere, in every part of the land, in which we feel that, not the interests of the public, but the interests of special privileges of selfish men, are served; where contracts take precedence over public interest. Not only in big cities is this the case. Have you not noticed the growth of socialistic sentiment in the smaller towns? Not many months ago I stopped at a little town in Nebraska while my train lingered, and I met on the platform a very engaging young fellow, dressed in overalls, who introduced himself to me as the mayor of the town, and added that he was a Socialist. I said, "What does that mean? Does that mean that this town is socialistic?" "No, sir," he said; "I have not deceived myself; the vote by which I was elected was about 20 per cent. socialistic and 80 per cent. protest." It was protest against the treachery to the people and those who led both the other parties of that town.

All over the Union people are coming to feel that they have no control over the course of affairs. I live in one of the greatest states in the Union, which was at one time in slavery. Until two years

ago we had witnessed with increasing concern the growth in New Jersey of a spirit of almost cynical despair. Men said, "We vote; we are offered the platform we want; we elect the men who stand on that platform, and we get absolutely nothing." So they began to ask, "What is the use of voting? We know that the machines of both parties are subsidized by the same persons, and therefore it is useless to turn in either direction."

It is not confined to some of the state governments and those of some of the towns and cities. We know that something intervenes between the people of the United States and the control of their own affairs at Washington. It is not the people who have been ruling there of late.

Why are we in the presence, why are we at the threshold, of a revolution? Because we are profoundly disturbed by the influences which we see reigning in the determination of our public life and our public policy. There was a time when America was blithe with self-confidence. She boasted that she, and she alone, knew the processes of popular government; but now she sees her sky overcast; she sees that there are at work forces which she did not dream of in her hopeful youth.

Don't you know that some man with eloquent tongue, without conscience, who did not care for the Nation, could put this whole country into a flame? Don't you know that this country from one end to another believes that something is wrong? What an opportunity it would be for some man without conscience to spring up and say: "This is the way. Follow me!" — and lead in paths of destruction!

The old order changeth — changeth under our very eyes, not quietly and equably, but swiftly and with the noise and heat and tumult of reconstruction.

I suppose that all struggle for law has been conscious, that very little of it has been blind or merely instinctive. It is the fashion to say, as if with superior knowledge of affairs and of human weakness, that every age has been an age of transition, and that no age is more full of change than another; yet in very few ages of the world can the struggle for change have been so widespread, so deliberate, or upon so great a scale as in this in which we are taking part.

The transition we are witnessing is no equable transition of growth and normal alteration; no silent, unconscious unfolding of one age into another, its natural heir and successor. Society is looking itself

over, in our day, from top to bottom; is making fresh and critical analysis of its very elements; is questioning its oldest practices as freely as its newest, scrutinizing every arrangement and motive of its life; and it stands ready to attempt nothing less than a radical reconstruction, which only frank and honest counsels and the forces of generous coöperation can hold back from becoming a revolution. We are in a temper to reconstruct economic society, as we were once in a temper to reconstruct political society, and political society may itself undergo a radical modification in the process. I doubt if any age was ever more conscious of its task or more unanimously desirous of radical and extended changes in its economic and political practice.

We stand in the presence of a revolution — not a bloody revolution, America is not given to the spilling of blood — but a silent revolution whereby America will insist upon recovering in practice those ideals which she has always professed, upon securing a government devoted to the general interest and not to special interests.

We are upon the eve of a great reconstruction. It calls for creative statesmanship as no age has done since that great age in which we set up the government under which we live, that government which was the admiration of the world until it suffered wrongs to grow up under it which have made many of our own compatriots question the freedom of our institutions and preach revolution against them. I do not fear revolution. I have unshaken faith in the power of America to keep its self-possession. Revolution will come in peaceful guise, as it came when we put aside the crude government of the Confederation and created the great Federal Union which governed individuals, not states, and which has been these 130 years our vehicle of progress. Some radical changes we must make in our law and practice. Some reconstructions we must push forward, which a new age and new circumstances impose upon us. But we can do it all in calm and sober fashion, like statesmen and patriots.

I do not speak of these things in apprehension, because all is open and above-board. This is not a day in which great forces rally in secret. The whole stupendous programme must be publicly planned and canvassed. Good temper, the wisdom that comes of sober counsel, the energy of thoughtful and unselfish men, the habit of coöperation and of compromise which has been bred in us by long years of free government in which reason rather than passion has been made to prevail by the sheer virtue of candid and universal debate, will enable us to win through to still another great age without violence.

WHAT THE WORLD'S WORK IS TRYING TO DO

BY

WALTER H. PAGE

MY ASSOCIATES ask that I write what we are trying to do with this magazine, thereby going squarely against the first principle of good editing. That first principle is that every piece published shall be interesting; and in such an article there is less a tale to tell than an explanation to make.

The group of men who direct the WORLD'S WORK have a very definite aim, however often they miss it, and we are very much in earnest. Earnestness, mind you, does not mean solemnity, and we try to keep it from meaning dullness. The aim is — every reader of the magazine knows it as well as we do — so to report and to interpret representative activities of our time as to give the reader a well-proportioned knowledge of what sort of things are happening in the world — in the American world in particular. It may be a political campaign, it may be a woman's "movement," it may be the building of a great dam across the Mississippi River, it may be explanations of scientific discovery and of new scientific theories, it may be the industrial progress of the Northwest or of the Southeast, it may be the breeding of better grain or of better cotton, the making of fitter schools, the waste of money and the degradation of men by unworthy pensions — it may be anything typical of the activities of the people and worthy of the attention of thoughtful persons; and in the course of a year the magazine ought to contain articles on all sorts of these important activities.

We work in constant conference; for it is all team-work. Every man knows and every man must know what every other one is doing; and in our conferences we decide what volunteer articles we shall accept and we make plans for our outside friends who help us write such articles, for examples, as Mr. Stockbridge went West to write, and as Professor Orth of Cornell is writing about the labor war.

It is a cheerful and exhilarating occupation; for we must keep an eye on all sorts of human activities and meet and learn from men of all helpful minds and callings. The real reward of the editorial life is in the friends and acquaintances that one has occasion (and necessity) to make. No sort of active and useful man or woman is foreign to our plans or purposes. Of course not even a much larger group of men than we are could possibly know many subjects thoroughly; but each of us has his own kinds of tasks — one, subjects of social welfare; another, political subjects; another, financial and commercial subjects; another, rural life and education, and so on; and each does his reading and makes acquaintances that lead to increasing knowledge of his group of subjects. Consequently we must go about the United States and see what men are doing. The theory is that at least one editor of the magazine shall visit every section of the country at least once a year, and, of course, at times other countries also. One of the most pleasing compliments ever paid to us was said in half jest by a man who had led a closet-life: "Why, you really regard Wyoming and Louisiana as parts of the United States." The real work of making a "live" magazine cannot be done in an office.

There is, therefore, no mystery about the work: the main thing to be said about it is that it is work, unceasing, hard work; but do not forget that it is interesting work. If an article does not interest us, it is pretty sure not to interest the reader; for we are men of different temperaments, of unanimity only in ideals and in purpose, men of different kinds of training, of somewhat different outlooks on life.

Yet nothing has ever appeared in the magazine about which we had any serious disagreement; and, of course, no man ever writes anything that he does not profoundly believe. The note of sincerity is as necessary in a magazine as it is in a man. You can't make any genuine periodical with "literary operatives." If we should encounter subjects or plans or policies about which there was radical disagreement, we should, I presume, leave them alone. So far we have not encountered them.

Nor is the editorial department the whole magazine. There is still wider team-work throughout the publishing house of which it is a part. It is coordinated with other activities, to the benefit of all. The other owners of the magazine at times contribute most helpfully to the stock of editorial ideas. There is a luncheon on every Wednesday at which all the editors and all the owners sit down to talk over the WORLD'S WORK. One day the talk may turn on editorial subjects, another day on the financial condition of the business, another day on the manufacture of it, on another day on the advertising department; on another day on all these subjects. There are no secrets that one department or group keeps from the other. Such conferences would be of no value if they were not open and frank; and there is no opinion or suggestion ever held back for fear of anybody's disapproval. The atmosphere is as free as any group of men can make and keep it; for not a man has to do with the magazine who has any other interest to serve or any other business to engage him. You could not make a helpful and interesting periodical as an incident to any other business or "interest"; and many a one has failed by such an effort.

Of course, there is not unanimity about every detail in so large a body of men. Why should there be? For instance, when the political campaign came on last year, the policy of the magazine was determined by the editor, who is the court of last appeal, if there be any occasion for appeal. There were in the group some men who differed with the political policy of the magazine. What better corrective influence against sheer partisanship could be devised? This, I am sure, was a lucky circumstance — lucky in one instance at least; for when an article in proof was read by a dissenter he made the valuable criticism that it was less than fair to his side. The unnecessary cruelty of the criticism was omitted, and the magazine was the better for it — at least in temper.

Did I not warn you that all this is dull? I mean that the telling of it is uninteresting, for the doing of it is always interesting. For example: We described the farm demonstration work in the Southern States whereby two bales of cotton were made to grow where one bale grew before; and a gentleman in North Dakota read about it and set to work to have similar instruction given to the farmers in his state, at a cost of more than $80,000 a year. A missionary in India read about the eradication of the hookworm in our semi-tropical regions and he wrote for information. It happened that he lived at the place with which the American Hookworm Commission most desired to get into communication. A man came to this office one day and said: "You had a little article about farming profits in a certain part of the country last year. I read it and said that you had been imposed on. But I had occasion to visit the place last month and I invested $100,000 there. You didn't tell the story half strong enough." There are now in this office letters from men who say they have more than a million dollars to invest in farms, asking suggestions about soils and climates and markets and such like things. (One man, by the way, gives his whole time and takes much of the time of the editors, too, in answering questions about every conceivable thing.) Of course, many millions of dollars are invested in conservative securities on the advice of the financial department; and many magazines imitate the WORLD'S WORK in maintaining such a department.

But these are obvious, concrete, reportable results. A better result is the influence on public opinion of some of the policies emphasized by the WORLD'S WORK. Sometimes these are not popular. Take the abuse of the pension-roll as an ex-

ample. There has been a decided stiffening of opinion and of courage since Mr. Hale's and Mr. Charles Francis Adams's articles were published in the WORLD'S WORK two years ago. Many newspapers that had before been uninformed now demand that the roll be made public and thereby purged of unworthy names; and the opposition in Congress to "any old pension" scheme grows stronger yearly.

Evidences multiply of the effect of educational articles that the magazine has published. A description of a good school always suggests the same plan to persons in another part of the country.

This sort of thing has occurred time and again. The WORLD'S WORK has found a country preacher or a country teacher who did his job so well that there was inspiration for others in the story of it. As soon as a description of such a man's or woman's work was published they began to receive invitations to lecture and presently they found themselves so famous that they were called from their fields of labor to organize society in general. This is one of the misfortunes of fame.

The results that justify the magazine's existence are what educational folk, who love long words, call "inspirational." It carries to one man or to one group of men a story of what somebody else is doing and gives fruitful suggestions. For instance, an account of Dr. Dowling's health-train and of his energetic work toward the cleaning up of Louisiana set boards of health and sanitary officers at work in many other communities.

The first quality required to make a helpful magazine is a balanced judgment, an intellectual inability to be drawn off into the advocacy of any fad or cure-all, or to allow one's personal tastes and particular enthusiasms to dominate the whole periodical—in a word, the refusal to become sensational. "Movements" are necessary and desirable in the free life of the United States; but the free life of the United States is a very complex thing, and no "movement" carries all salvation with it. Good judgment calls for the reporting of all sorts of good work but for very wary acceptance of all men's burning enthusiasms. Common sense is the most useful quality that you can get into an editorial office.

In the execution of the task of making a magazine, the greatest practical difficulty is the difficulty of finding men who can write with simple directness and still put the glow of conviction and of "human interest" in their writing. I have on my desk now this report from one of my associates on a manuscript:

"This is a horrible example of what a college professor can do to obscure a good idea by means of a magazine article. The idea itself is interesting and it emerges first on page 8."

Every word of this report is true. The first seven pages are dull commonplace — the same sort of things that thousands of writers have written as the first seven pages of a manuscript about thousands of subjects. One of these days we shall have post-graduate schools of writing at our universities, or somewhere else, where young men will be taught to omit at least half of what they feel moved to write "in a state of nature" — to present their messages directly and briefly, with charm and enthusiasm. It required ten years full of many experiments to get together (out of 20 or more men) the four who do the main work of making this magazine.

At intervals, we have asked blocks of our subscribers what parts or qualities of the WORLD'S WORK they think most highly of and what they find least helpful, and we have asked for suggestions. Many corrective and suggestive comments come, but few constructive ideas — naturally enough, for it is not the business of men who buy the magazine to make it. But those who are kind enough to answer such inquiries do a great service by giving the editors, sometimes unconsciously, the point of view of the readers that they are trying to serve. It is always helpful to meet and to talk with or to read letters from such persons.

The truth is, the successful editing of such a magazine is in reality the interpretation of the people, their revelation to themselves; and this cannot be done except by men who know the reading and thoughtful people of the whole country, or as many of them as possible.

This is what with all humility and ear-

nestness we are trying to do, regarding the magazine as an instrument of reporting the people's activities and thought in the widest and most helpful and sympathetic way, with directness of speech and with a joyful confidence in the soundness of American life. This leaves no room for merely personal journalism nor for becoming the organ of any "cause" or "party" or man or doctrine or school. The whole American people is a good master to serve. But any sect or section or party of them would be a tyrannical master. The evangelist has his uses but they are not the highest uses.

The American public is surfeited with magazines; for, as a business, the making of them is greatly overdone. Many lead a precarious life. Many are bankrupt. Many more, whose purpose is chiefly commercial, try this tack and then that; for profitable sensations enough cannot be found to maintain them. The public does not show the nicest discrimination — in fact, there are many publics; but in the long run the half-dozen or more magazines that serve thoughtful people year in and year out by honest work find permanent friends, whom it is a great privilege and joy to serve. One of the most pleasing facts about the WORLD'S WORK is that a much larger percentage of its subscribers renew their subscriptions year after year than is usual with most magazines. This is a guarantee of sufficient stability to make us sure that we are doing some service and that it is a natural and normal and not a merely spasmodic service.

And on those rare occasions when it seems no violation of good taste to write about the magazine (and it is hoped that this is such an occasion) the one thought that comes first and comes strongest is gratitude for the appreciation that has been shown year after year by readers in all the walks of life. You may see in our files a letter from an illiterate carpenter in Maine close beside a letter from a President of the United States and a president of a university, and a banker and a farmer — from all sorts of men — saying that they find the WORLD'S WORK worth while. That's reward enough; and what we are trying to do is to deserve the thanks that men like these send us, by a real service in reporting the significant activities of our many-sided life with the hopeful and helpful spirit that every well-balanced man must have when he studies it in the large. To know the American people in our time is a great privilege and a constant inspiration; and we do on occasion — as on a New Year — feel that such work brings us a realization of the majesty of our democracy.

INVENTORS AND YOUR MONEY

INVENTORS are, with some exceptions, among the most expensive friends in the world. This conclusion is based upon a story, among hundreds of similar ones, told to me by a business man on the day this article was written. A friend of his, a young man of capital and brains, met an inventor in disguise at a golf club two years ago this summer. The young capitalist was fascinated by his chance-met friend. This led to an opportunity for the latter to disclose a new machine that he had invented which would form the basis of an entirely new system of telegraphy.

The capitalist at first was interested, then was deeply interested, and finally was immersed in the idea. He entered into a partnership with the inventor to complete the experiments and to carry the process through to a commercial conclusion. In September last the partnership was dissolved. It cost the youthful capitalist nearly $400,000, and it left the inventor just as poor as he was before. He was an honest but misguided inventor.

There have been thousands of such instances. From a long correspondence with the deluded victims of financial failures it may be said that there is hardly

any other lure so attractive to the unsophisticated investor as the financing of inventions that are supposed to be rivals of the telephone, telegraph, and electric light. A good many hundreds of companies are floated and their securities sold to the public in the United States every year that represent simply the possible future earning power of new mechanical inventions. If you get a collection of bond salesmen together, from the smaller cities and towns, and one of them happens to tell a story about the way the citizens of his town were taken in last year by some inventor or some company exploiting a new mechanical invention, you will find that almost every man of the group can match the story with another one just like it. Sometimes it is a local invention; but much more likely it is not a home product but an imported one from some other town or city. It would appear, from the stories that circulate, that a great majority of the inventions created and patented in this country every month are financed in the beginning by small contributions of capital collected from people of small means away from the financial centres of the country.

Of course, that is not true. It is easier to find traces of this kind of queer public flotations than it is to find the records of the thousands of similar experiments carried on in the big cities; but the fact probably is that more than three quarters of the inventions are financed on private money raised by little groups of venturesome people in New York, Boston, and other large cities, and by people who understand that every dollar put up in this way is risking total loss for an enormous profit.

To illustrate, there is a capitalist who is considered one of the powers in Wall Street. He is a director in three or four of the biggest banks, two of the biggest railroads, and several of the big industrial companies of the country. He rose from the ranks through fortunate industrial enterprise and is now reckoned to be worth many millions of dollars. This man has backed probably a score or more of new inventions. One of them was one of those bottles that are either hot or cold; seven or eight of them were electrical inventions of extraordinary character; several others have been processes of metal manufacture; almost all of them have been revolutionary. His name has not been publicly mentioned in connection with any of them although one or two have become well known national institutions.

That is the right way to float an invention. This man does not feel very keenly the amount of money necessary to experiment and to manufacture models or to do whatever else may be necessary to translate the vague and indefinite products of the brains of geniuses into commercial products that have a money value. He knows that he has taken a gamble in every instance and he goes ahead to take it without much misgiving. If he finds that he has to take a loss and write down what would be to most men a whole lot of money on the wrong side of his "experience account," he does it without going to law about it, though not always too graciously. If he wins, he cashes in when he thinks the time has come. He has guessed wrong more than once.

Again, a certain railroad president in New York is at present about as deeply interested in a new process of making steel rust-proof as he is in running the railroad of which the stockholders made him president. Not so very long ago a new compressed-gas proposition named as two of its directors the heads of two of the greatest industrial trusts in the country, and these men with their friends originally put up all the capital required to convert the idea of this gas into the gas itself and make it more or less a commercial product.

There is a mighty big difference in the way these wise and experienced financiers go into a proposition of this sort and the way the country minister, doctor, lawyer, or plain citizen buys the stock of a new invention. The way to catch the innocent layman is to take him a prospectus which starts off with the story of the Bell telephone, carefully omitting all the struggles through which Dr. Bell's invention passed before, with the generous aid of Mr. Hubbard and his friends, it became, almost by chance, a commercial propo-

sition, and forgetting to state that hundreds of shares of it were given away to liquidate bills payable in the early stages of the business. This part of the prospectus ends with a picture of the American Telephone & Telegraph Company to-day and leaves you with the impression that a dollar or so invested in telephone stock in the first place would now run up to thousands — or is it millions? — if you had held it in the meantime.

Having thus begun, the prospectus leads you gently up to and into a new invention that beats the telephone with ease. It does not make much difference what the invention is. The one that happened to come in the mails to-day was a simple little thing to take the place of gasolene in running an automobile, which will cut the cost of operating a machine down to about 10 per cent. of its present level. All you need to have to get a foothold in this company is a dollar, and it will almost certainly be as good as the Bell telephone ever was. Last week a man sitting in an automobile in lower Broadway handed out circulars about a newfangled tire that was a stranger to blowouts and punctures and it, too, was going to put the telephone in the shade. Nowadays, it may be noticed that the principal rivals of the telephone are in the automobile business, for that is the business in which the quickest fortunes are made—and lost.

After you have read the description of the invention, and mastered some of its details, you read on and find out perhaps where you can see the thing working and then, as a finale, where you can get the stock and how much it will cost you. Turn over the page and you will find some queer, vague testimonials with well known names printed beneath them. If you happen to be widely read you'll probably find out that these testimonials come from men eminent in their own fields but unskilled in mechanical matters or industrial affairs.

Nobody can guess how many millions of dollars have been sunk in worthless inventions year by year on the strength of prospectuses built along these lines. Certainly it runs into nine figures, and it has come, of course, in large part from the ignorant and the credulous and, unhappily, the men of little means.

Look, by way of contrast, at the way the man of money ventures a very small part of his big fortune in affairs of this sort.

He demands that a new invention pass first under the review of men qualified by experience and study to talk intelligently about it as a commercial proposition. If he has plenty of money to spare and has a taste for mechanical things he is willing to go in to a small extent after he has received competent advice that the thing proposed ought to be a money maker. Occasionally, of course, some miracle like the Keely motor swindle takes in hard-headed and otherwise successful business men, but it does not often happen. In the case of a chemist a few years ago who induced some practical business men to finance a little project for manufacturing camphor synthetically, they put the chemist in jail as soon as they discovered what was the matter with him.

No man can lay down a formula for judging an invention. There is one rule, however, that is worth while. It is that one should never pay any attention to what the inventor has to say. An inventor has got to be an optimist. A pessimist never invents anything because he starts out with the theory that the chances are it cannot be done. A real inventor sees only the facts that are favorable and ignores every consideration that would point to caution or conservatism in judging the efficiency or even the commercial value of the product he has invented. His opinion, therefore, is of no value except as a basis for other men to work on.

Another cardinal principle is not to invest more than a very small percentage of your available money in any one invention or new process. The chances are probably at least a hundred to one against the possibility of any new invention rivaling the great commercial inventions of any ten-year period. In other words, there are probably ten thousand inventions that are either unsuccessful or only successful in a small way, to one that makes a fortune for its backers.

A 100,000-ACRE BUSINESS

A TEXAS RANCH WORTH $5,000,000 WHICH CONDUCTS ITS VARIOUS DEPARTMENTS AS SEPARATE BUSINESS ENTERPRISES, WHICH OWNS ITS OWN TOWNS AND BANKS, AND WHICH PAYS GOOD SALARIES TO 5,000 CONTENTED PEOPLE

BY

THEODORE H. PRICE

ABOUT 1871, or some 40 years ago, there drifted into the southwestern part of Texas three young men. They were named Coleman, Fulton, and Mathis. Fulton was an Englishman and a civil engineer. Mathis and Coleman came from Kentucky and Tennessee.

The whole state was a cattle ranch. The unit of land measurement was not an acre or a section of 640 acres, but what is known as a "Spanish League," which is a little less than three miles square and contains 4,400 English acres.

These three young men, inspired by the love of adventure and the hope of gain, travelled southward from Texarkana until they came to the shores of the Gulf of Mexico. There they found a peninsula bounded by Copono Bay on one side and by Corpus Christi and Nueces bays on the other. It embraced in all about one half million acres of land. Title to this was acquired, some of it doubtless by pre-emption and some of it by purchase. It is said that not infrequently they were able to trade a pony for a Spanish League of the mesquite prairie. Competent judges are of the opinion that wherever cash was paid, the consideration probably did not exceed 50 or 75 cents an acre, if as much.

They ran what was probably the first fence line in the southern part of the state of Texas, across the northerly end of the peninsula, and thus asserted their right to ownership. The land was then available only as a cattle range and cattle were purchasable for as little as $2 or $3 a head. They got the cattle in north Texas, drove them south through their fence gates, and let them roam. Commercial communication with the markets of the world was only to be had from this part of Texas by water, but they were on the Gulf Coast, and on the Coast they erected a rendering establishment, where they found it profitable to kill cattle that were worth not more than $5 a head, for the tallow and hides that they would yield. The tallow and hides were shipped to New Orleans, some 500 miles distant, in small coasting vessels, and from there found a market through regular channels.

Of course, money was required for the development of even so crude an enterprise, and when it commenced to be needed one of the original partners, Mr. Mathis, withdrew, taking the northern part of the land for his share; and the other two men, Coleman and Fulton, formed a company which they called the Coleman-Fulton Pasture Company.

They took the stock of this company to Cincinnati, which was then the banking centre of the Southwest, and there induced Mr. David Sinton, a Cincinnati banker whom they knew, to buy part of it and lend them some money on the balance. Subsequently Mr. Sinton, who seems to have been a man of imagination, bought for himself and Mr. Joseph F. Green practically all the stock of the Coleman-Fulton Pasture Company.

At Mr. Sinton's death, the property passed into the control of Mr. Green and Mr. Charles P. Taft, who had married the only child of Mr. Sinton. During Mr. Sinton's lifetime he had sold off from time to time much of the property, until, of the tract originally controlled by Messrs. Coleman and Fulton, there was left about 100,000 acres.

Some thirteen or fourteen years ago, Mr. Taft and Mr. Green determined upon a policy of land improvement instead of land selling. Mr. Green went to the

land to live and develop it, and one bit of romance connected with the story is that he had not been there long before he met and married Miss Mathis, a daughter of one of the original trio of pioneers that, forty years before, had had the vision to foresee the possibilities of development in southwestern Texas.

A COMMERCIALIZED FARM

The progressive agricultural development and the commercial organization with which this story has to deal dates from Mr. Green's advent as manager of the property, and Mr. Taft's coöperation as financier. His brother, the President, visited the ranch about two years ago, and his presence made the existence of the Taft Ranch well known throughout the world. It is not, however, because of its size or because of the visit of the President that it is interesting to the many students of agricultural development who are to be found there from time to time. There are many other ranches in the United States that are larger, and in Mexico there are huge tracts of land under the ownership of one proprietor, but their agricultural development remains unaccomplished.

The Taft Ranch is interesting because it is a large agricultural undertaking thoroughly commercialized and highly organized. On it agriculture has become as business-like as any manufacturing concern. It is financed and managed like any other industrial organization.

There are four towns or villages on the property: Sinton, Taft, Gregory, and Portland. There are between 4,500 and 5,000 people on the tract, and 15,000 cattle, 5,000 sheep, 1,000 hogs, and 1,000 horses and mules. The administrative centres of the ranch are located at the two towns of Taft and Gregory, the main office and Mr. Green's headquarters being at Gregory. He occupies a handsome house called La Quinta on the bluff overlooking the Gulf of Mexico, and there he is to be found nearly every morning at dawn taking a swim in the surf. His principal associates and coadjutors in the management of the property are Mr. Joseph Tumlinson, who has been in charge of the live stock department of the ranch for ten or eleven years, and Professor Charles H. Alvord, formerly of Michigan and lately Dean of the Agricultural and Mechanical College of Texas. About a year ago, Mr. Green induced Professor Alvord to abandon a life of academic agriculture for one of practical farming and, as a result, the agricultural development of the Taft Ranch is being directed along the most scientific lines. These three gentlemen, Messrs. Green, Alvord, and Tumlinson, deserve well of the world. They have had the courage to undertake a solution of the greatest economic problem of the day by applying the most advanced commercial and scientific methods to cheapening the cost of food and making agricultural life attractive and profitable.

THE PRINCIPLES OF SUCCESS

In the last analysis, however, their policy seems to be governed by four fundamental and coördinate principles.

First, the welfare and comfort of their employees and subordinates. The farm houses and the smaller homes in which the hired laborers live, are all modern and comfortable. They are all connected by telephone or within easy reach of telephonic communication. They are connected by rail by the San Antonio and Aransas Pass Railway which runs from one end of the property to the other. The houses are, for the most part, supplied with electric lights, and with ice; for on the ranch is an ice plant with a capacity of about 50 tons daily. There is a very comfortable hotel owned and operated by the company. An exceptionally well appointed and modern hospital is maintained, to which those who are ill or injured may be sent, and where they may have the benefit of the most scientific attention from physicians and nurses.

There are two or three Protestant churches on the property and the company is now erecting a Catholic church for the convenience of the many Mexicans employed. The water supply, which is derived from artesian wells, is excellent, and the company is now constructing a 10-inch water main from its best well at Taft, north and south through the entire tract. Bathing houses, where employees

may refresh themselves by a dip in the surf, are provided. Well equipped stores, where even the most exacting can supply their wants at reasonable prices, are maintained, but there is no effort made to compel patronage. No intoxicants are permitted to be sold.

Second, the subdivision of authority and responsibility. Every department is under the management of a competent and well paid superintendent, who is held rigidly accountable for results. These men conduct their respective departments as if they were separate and independent commercial entities, but coöperation is nevertheless secured by frequent conferences, at which all are present. These conferences (presided over by either Mr. Green, Professor Alvord, or Mr. Tumlinson) not infrequently last during the whole forenoon, and are really deliberative assemblies at which every one is permitted the most unrestrained expression of his views.

Third, the application of the most scientific methods and the utilization of the latest and most efficient labor-saving machinery. The company owns many automobiles, seven gasolene power plows, a gasolene ditch and road making device, and an equipment of agricultural machinery that fills a shed covering approximately an acre.

Fourth, self-maintenance through the home production of food and wise economy in the use of all products and by-products. For years the corn and other live stock food raised on the ranch has been in excess of the requirements. The fertilizer produced from the blood and entrails of the cattle slaughtered at the packing house is all put back on the land. The skimmed milk produced at the dairy is fed to the pigs, and the cotton seed meal and hulls coming from the cotton oil mill are all fed to the cattle. The ranch is unlike most other farms, in that it is for the most part independent of the rest of the world for both its human and its animal food. The meat and vegetables that man requires are all produced and put in marketable condition there, and the food that cattle and horses require is likewise all produced there. The lesson that is to be derived from this practice is immeasurably important to the Southern farmer if he will only heed it.

These four fundamentals: namely, the comfort of the individual, the subdivision of authority and responsibility, the use of scientific methods and labor-saving machinery, and self-maintenance in the production of food, are the broad principles of the success of the Taft Ranch.

As a result of their application, the gross cash value of the things raised and sold exceeds one million dollars annually, and most of this money stays there because most of the things that are requisite to life, health, and happiness are produced there. The automobiles, textil fabrics, and the wheat flour that are used on the ranch must be bought elsewhere; but it is entirely logical that, within a very short time, the cotton production will be spun into yarn and woven into cloth at a cotton mill on the ranch.

The cattle business, for instance, is in charge of Mr. Tumlinson. He selects his subordinates, directs the breeding of the cattle and supervises his department free from interference. He has a farm upon which he produces much of the cattle food that is required to supplement the range grass, and if he finds it necessary to purchase other food, he buys it from the oil mill or the heads of the other departments which have a surplus, at the equivalent of the market prices for such stuff elsewhere. In his own department he is supreme, subject only to the direction of Mr. Green, who interferes with him but little.

The agricultural development is generally under the direction of Professor Alvord, who selects and directs the activities of his subordinates in this department.

The cotton land, of which there is about 8,000 acres on the property, is divided into tracts of from 1,200 to 2,000 acres each. Every tract is under the supervision of a superintendent, who contracts for its cultivation, either by day labor or on the tenant plan as may seem to him to be best. This superintendent is held responsible for the profit or loss shown by his department, and is debited with all costs of production and credited with all proceeds derived therefrom. Mr. Green intends to increase the acreage in cotton until 50,000 acres are in cultivation.

The hog ranch, so-called, is one of the

most interesting units of the enterprise. In combination with the dairy farm, it is in supreme control of a superintendent, who must make good or lose his job. Some sixty Jersey cows are there milked by machinery. The cream and milk are promptly separated and the skimmed milk is fed to 500 or 600 little pigs that have just been weaned. One of the most interesting and amusing sights of the ranch is the feeding of these little pigs. As these pigs grow to hoghood, they are fed, first upon corn and finally turned out to root for peanuts, of which there are forty or fifty acres planted for their special benefit. The peanut, next to "mast" or acorn food, is supposed to produce the finest flavored bacon.

The sheep are under the special charge of the superintendent of the sheep ranch, and woe betide him if he prove a careless shepherd.

The cattle, hogs, and sheep, when in condition to be killed, are sold at current market rates to the Taft Packing House, an exceedingly modern and complete establishment located at Taft. The packing house is an independent commercial entity, which pays for its cattle at the market rate, and sells its product in competition with the great packers of the West. It is already supplying many of the butchers of southwest Texas, although it has been in operation less than two years.

There are six cotton gins upon the property and one cotton oil mill, and these are all under the able management of a Mr. Roberts, who buys the cotton and the seed from the farmers at the current market rates and sells them precisely as if he were independently in business on his own account.

The stores conducted by the company at Taft, Gregory, and elsewhere, endeavor to buy as cheaply and sell as fairly as an independent merchant might, and if they fail to show a profit, an abler merchant is found as superintendent of the mercantile business.

The same thing is true of the hotel which the company owns and manages.

The power plows that clear and cultivate the prairie are under the independent control of an able superintendent, whose salary depends partly upon his ability to reduce the per-acre cost of clearing and cultivating the land. These plows are moved over great areas with a rapidity that is remarkable, especially when it is considered that they are accompanied by a camp consisting of four comparatively large and substantial houses, occupied respectively as a machine shop, a bunk house, a kitchen, and an office. These houses have been constructed on what may be described as heavy sled runners, and, being attached to the engines which pull the plow, are skidded across the prairie at the rate of two miles an hour.

Machine and blacksmith shops are maintained at various points on the property, but those who have work to do there have to pay for it in cash.

There are two banks on the property, one called the Taft Bank, at Taft; and the other the Taft Ranch Bank, at Gregory — the managers of which have always to be very sure that their balances are on the right side.

As an object lesson in agricultural organization, this plan of division into separate and independent units, each one administered with due regard to the rights of its associate units, is unequalled.

ASSETS IN MONEY AND HAPPINESS

One of the best things about the community life on the Taft Ranch is that all the people, though working hard, appear to be contented and hopeful. The schools on the place provide not only for "book learning" but for agricultural education as well. To each of them is attached extensive gardens and there every child has a little plot of ground, where he may observe the mysteries of nature's chemistry.

No allusion has been made to the profit which the enterprise yields. It ought to be and undoubtedly is large. The land, which originally cost little or nothing, is probably worth at least $50 an acre. The improved land is easily salable for $75 an acre, and the unbroken prairie for $40 an acre. An average of $50 an acre for the entire tract would indicate a present valuation of something more than $5,000,000 for what, forty years ago, was almost

valueless. This does not take into consideration the improvements or the value of the building lots in the towns, nor does it allow for the profit from the various departmental units of the business, nearly all of which yield satisfactory returns.

It is not, however, with the gain that may be measured in money that this article has attempted to deal. It is of course essential that all such enterprises should be profitable. Unprofitably conducted they cannot exist. Whatever profit the Taft Ranch may yield to its owners is unimportant when compared with the enormous value of the lesson that it is teaching to the farmers of the Southwest, which it will teach to the American agricultural world, as the story of its development shall become better known.

The Taft Ranch is daily demonstrating that, in the hands of competent executives, agricultural development and enterprise are legitimate subjects of capitalistic exploitation on a large scale. If the captains of industry and finance, who have done so much for American progress in other directions, will study and emulate the success of the Taft Ranch and its management, they may do much to make our national life healthier and happier.

THE BATTLE LINE OF LABOR

III

THE PRICE OF TURMOIL

WHAT THE UNIONS PAY, IN MONEY AND IN SUFFERING, FOR "THE RIGHT TO STRIKE" AND WHAT EMPLOYERS PAY, IN LOST PROFITS, FOR "THE RIGHT TO RUN OUR OWN BUSINESS IN OUR OWN WAY"—THE COST TO THE PUBLIC

BY

SAMUEL P. ORTH

AUTHOR'S NOTE.— *A number of the men interviewed while I was gathering material for these articles do not desire to have their names disclosed for divers reasons. It has been necessary, therefore, in a few instances to resort to the less satisfactory method of giving the facts without naming the authority. If any reader, however, is curious about the authenticity of my sources, I can privately furnish the references in most cases.*

"ENGLAND is in hell," wrote the late William T. Stead in one of his last contributions to American journalism, during the coal strike last spring. He was thinking of the misery of the strikers' families and of the suffering of the hundreds of thousands out of employment.

A general strike in one important industry, like a coal strike or a railroad strike, produces a hundred thousand tragedies; not merely inconvenience, but suffering and incalculable bitterness of heart.

Of course, it is the *personal inconvenience* to the public which arouses them out of their industrial lethargy and sets them to thinking. We have formed habits of life, based on certain public conveniences, which soon become necessities. Any one who has lived through a street car strike, or a telephone or telegraph strike, realizes this. But the public has rarely been in the "hell" which Stead described. And it forgets all about it, after the wheels are turning again and the odor of brimstone has passed away. It will probably take prolonged actual suffering on our part to rouse us into some action that will lessen the tortures of these industrial hells. We, the public, are selfish, narrow, petulant, and ingenuous. When I told Mr. Harry C. Hunter, counsel for the New York Metal Trades Association, who has observed industrial conditions for years and has had a wide personal experience with the partisans and the public, that I was looking at the

problem from the public's position, he laughed, and said: "I can tell you that in one sentence. To-morrow morning, if your ice isn't delivered promptly, you will call up the ice man's office and want to know what in the dickens is the matter with everybody."

It's time the public were counting the costs of this perpetual muddle. By the laws of group psychology and the rules of economics everybody pays the penalty of anybody's folly and suffering.

Businesslike, as we suppose, we always begin to count the cost with the dollar sign. The United States Commissioner of Labor computes the direct loss in wages, from 1881 to 1900, at $306,683,223; the amount paid in strike benefits, $19,626,254; the estimated loss to employers, $142,659,104; a total of $468,968,581. Bear in mind that this is visible money loss.

The item "strike benefits" merits special attention. It is the money saved by union members for the especial purpose of fighting. From 1899 to 1902 the iron molders took part in more than one hundred conflicts in which $325,000 were paid in strike benefits. From 1900 to 1904, the cigarmakers paid more than $380,000; from 1902 to 1904, the carpenters and joiners, $188,000; and so on through the list. Last year the American Federation of Labor reported 1,359 strikes, *involving directly 170,526 members and drawing nearly five million dollars out of the "defense fund."* Neither the direct loss in wages, nor the number of non-union men thrown out of work by these strikes, is given.

Now, the money that the unions put into this fight, either as "strike benefits" or as loss in wages, is not pin money, nor can it be charged to profit and loss at the end of the year, nor to advertising. It is bread and butter money.

Some union statisticians belittle the amount by spreading it over the 3,000,000 members. For instance, in 1890, 314,000 men struck and directly involved 1,500,000 persons. The loss of wages was only $1.80 per year for the 1,500,000. But it was more than $80. for some of the strikers. And any amount of spreading will not relieve the housewife of the individual striker from the terrible rigors of economy that a strike imposes upon her. I have never learned that the 3,000,000 offered to club together to help her, individually, out of the financial straits that a loss of $50 or $100 in one lump imposes upon her.

There are hardships to labor that no dollar sign can reveal. Take the Fall River strike of 1904, when 26,000 operatives refused a 12½ per cent. reduction in wages. They braved it out for six months. Loss in wages, about five and one quarter millions; the capital invested, $25,000,000, loses income for half a year. But figures show only the fringe of the loss. "How did the folks manage to live through six months?" I asked the local leader of the spinners. "I don't know how they did it. We all turned to doing what odd jobs we could find — picking berries, working in gardens, etc. But there was great suffering, and no doubt many children will always bear the marks of that strike. The women were the greatest sufferers."

It's a rare price our culture asks for the quality of heroism. The women and children are always the greatest sufferers when men fight over their differences.

Toward the end of this strike, 3,000 people were fed daily by the city and the Salvation Army. The town suffered. The savings banks ran dry. The butcher, the grocer, the dry goods merchant, were compelled to give credit until bankruptcy stared them in the face; and it was estimated that 18,000 people left the town during this period to find work elsewhere.

A man who kept a grocery store in New Bedford and who had himself been a loom-fixer, told me: "It's no joke keeping shop during strike; when women and children come in and beg with tears in their eyes for a loaf of bread and some tea to keep them from actually starving. People who haven't lived through it, and been right in the midst of it, can't realize the real hardship that such a time brings to everyone."

And when such a strike is ended, the laborer's family must economize a year, or longer, to make up the deficit and to redeem their furniture and few valuables from pawn. The shop keeper must share in this economy.

If the strike is long continued, wide-

spread, and in one of the basic industries, its dire effects are visited on many communities. When coal doubled and trebled in price, during the anthracite strike, the manufacturer could not ship goods, and the retailer cancelled orders. I was in New York City during the Pullman strike and saw the price of meat go up until it was beyond the reach of most wage earners.

Every strike, no matter how small, has its tragedies, of which the world never hears.

The money loss to business cannot be calculated. The sensitive, highly complex organization of modern business fears nothing so much as interruptions, shocks, sudden exigencies. Loss in orders, in the confusion of the markets, in idle capital, are a few of the items that swell the total. Ask any manufacturer who has had an extended strike experience, and he will figure, at once, the direct loss — what he paid detectives, commissaries, etc. — then he will add: "But the loss to business I cannot estimate. It is large." Sometimes a concern is obliged to begin all over again, in its efforts to restore itself to the confidence of the trade.

Then there is the loss of life and limb, which is always conspicuously displayed in the papers. One estimate places the loss, from January 1902 to July 1904, as follows: 180 lives lost, 1,651 wounded, 5,533 arrested. Here, too, only estimates can be made. No doubt a great many deaths occur, directly due to strikes, which never find their way into the statistician's tables; and many an assault is made under the cloak of night, in back alleys, which the morning never reveals.

The strike is the great demoralizer: it undermines the social standards of a community, it hardens the employer, it embitters the workman. The reflex results are infinitely more invidious than the direct, the visible, results.

Here is an experience told by the manager of an important concern in the East:

"Some years ago we had a strike. I used to get some of the most heartrending letters from the wives of the strikers. How some of the men lived through it I don't know. I believe some actually died from want, and some are still showing the effects of the ordeal. We simply had to fight it out on principle. It was hard on both of us. It cost us directly $65,000 in strike-breaking expenses. The men lost $160,000 in wages. Our loss in orders and interrupted business is beyond exact estimation. But the loss in the spirit of loyalty and devotion of the men to their work is the greatest. We had selected our force carefully; had taken, we thought, excellent care of the men; and had tried to be fair in every way. We did not refuse to talk over their grievances. But by and by the union demands became so onerous that we felt we could not accede. *We insist on managing our own business;* and this is practically the point that had to be fought out. Our whole shop was disorganized, our force demoralized, and it has taken a long time to get the organization back to its former efficiency."

This recital will fit a great many cases. Mr. Volney Foster, a gentleman of wide experience in these matters, said to the Congressional Committee in 1904, "The conflict always involves the arousing of malice, hatred, and murderous intent."

There is the malice toward the strike breaker. A laborer described his experience to me: "I've been through this sort of thing and I know what I am talking about. When you stand there, by the mill, with your friends around you — maybe you are hungry, anyhow you are sore — and see strangers walk through the gate, and you know that one of them is going to stand by your machine, use your tools, and get your pay, why, your fist just naturally doubles up, and your hand takes to a paving brick or anything that's handy just as natural as though it were taught. And when you think of your kids and the wife suffering for food, why, you don't care anything about policemen, law and order, and that sort of thing. Your feeling gets the upper hand, and you cut loose."

Sometimes I have mentioned this experience to employers and they say: "Why in the world don't the fellows think of their wives and children before they strike?" That doesn't meet the situation at all. The men are in possession of a spirit, a strike spirit, a passion, a psychic power that has probably been nursed and nurtured for months. "Before our last strike, the men

had worn on their coats, for a year, little tickets with 'Eight Hours' printed on them. They were all worked up to a pitch," is the way a Pennsylvania manufacturer put it to me. Mr. George W. Perkins, president of the Cigar Makers' Union, a careful, thoughtful, conservative leader, anticipated my questions. "You are going to ask me about violence. There often is violence. I do not wish to defend it. *But it arises out of the spirit of the contest.* The men feel injured, they think of their families, see strangers taking their places. *It is too late, when the strike is on, to say that some one, on one or the other side, or maybe both sides, has exceeded the limits of justice. When the war is on, passion, for the time being, rules some of the combatants.*"

This passion and malice is often no less bitter toward the employer than toward the strike-breaker. Many employers have carried revolvers during the days of the strike. Employers' houses have been assailed; and, during a street car strike, I have known of cars dynamited in front of the house of the president of the company. In exceptional instances, employers have been assaulted. Here is the experience of one manufacturer whose men struck, twelve years ago: "One day, when I was entering my shops, the strikers were around the door. One of them called me an insulting name. I retorted and, the first thing I knew, I was on the floor, and more than twenty men attacked me, kicked me when I was down. Somehow I managed to get up and crawl through the door. I was pretty well used up, and not in the mildest frame of mind, found a brass rod about two feet long, came back and hit right and left. I got eight of them; I think one man's neck is still stiff from my efforts at self-defense. We were in no conciliatory mood. I am free to say that I have been very much opposed to unions ever since, because I feel they were the cause of my men striking."

The feeling of resentment of employers toward the strikers is not softer. Somehow, an employer feels that his men *owe him loyalty*. There are shops, notably in the East, where men have worked twenty or thirty years, have started their sons as apprentices in their craft, and have seen the sons of their first employers take over the business. To such employers, the striking of such employees is the unpardonable sin. Often such men are never taken back.

There is a swift undercurrent, not only of distrust but actual fear. I have been told in confidence the inner personal experiences of many laborers and many employers. These men have requested me to refrain from making any direct public allusions to them — some, no doubt, because they have a natural aversion to publicity. On the other hand, there are many who fear the result of a public expression of their experiences and opinions. For instance, one manufacturer, a fine old gentleman of unique ability, told me that he actually feared the dynamiting of his house if his bitter experience with the unions were made public. Another employer wrote me that he would be willing to give his experiences to "reputable employers," but that he feared the retaliation of the unions if general publicity were given his story. On the other hand, union men have told me that they would surely lose their jobs if their complaint against the tyranny of their employers were made known. The spirit of retaliation, a spirit as ancient as the race, the leading motive of savage hordes, is the destructive subterranean force that is at work under the fair surface of our industrialism.

There are scores of shops in which the spirit of suspicion prevails. Many companies now employ detectives to ferret around among their men, spying out the "undesirables," even attending union meetings and reporting the doings and sayings of the individuals, so that the union nihilists may be sent to the Siberia of the "black list." The reader may imagine the feeling that prevails in such Russianized shops. Many of these establishments, run on this basis of unilateral self-righteousness, are prosperous to-day. They pay the highest wages, select their men with great care, and let them know that they will not "tolerate any dictation." But how long this kind of forced prosperity will last, no one can tell. Because the men, who know that a still hunt for rebels is constantly going on among them, are under a

constant strain. It may be unconscious, but the strain is there. And it is sure to have its hour of hysteria. A business may be built up on the spy system, but it must be maintained by the severest, most autocratic discipline.

And discipline is a tender point with both sides. "Obedience is a forgotten accomplishment" an old-fashioned man told me, who was brought up before the War as an apprentice and was for many years the manager of a steel plant. At the same time, there is nothing in this wage war to inspire the participants with the wish to be obedient.

Many strikes are colossal schools of lawlessness, in which women and children share, with strikers and sympathizers, in that disregard for authority which is our national sin. At such times breaks forth that natural resentment of those who feel themselves oppressed, treated unfairly by that vague Something which has no tangible form but is felt in many ways to be a reality, the Condition of Things, the State of Affairs, that has permitted stock watering, rebate taking, and a host of other unholy practices to take place at the expense of the humble. This resentment is a very real thing. And when the psychic conditions unite with outward circumstances to give it opportunity for expression, a whole community is seized with the frenzy of disobedience.

In the house of the toiler and in the house of the employer, on the streets and in the factory, in the hearts of men and in the souls of children, the spirit of strife is reaping the harvest of Hell.

The thousands of strikes, the myriads of unrecorded threats, the grumblings of the workers, the complaints of the masters, the angry glances, the ill-will locked in the heart that never reveals itself even to the eye — these are the tokens of the evil spirit of the wage war.

Their open manifestations are even now breaking through the crusts of national habit and social convention. To what other source shall we trace the sullen unrest that to-day possesses our people? The envy, malice, class hatred; the mad dash for extravagance; the wicked rivalry that extracts gold where none is due; the universal over-reaching? It is a terrible price we are paying for the "right to run our own business as we please" and the "right to strike whenever we please."

In yet another way this spirit of contention manifests itself. The employer claims that unions restrict the output; the employee retorts that the boss, by his efficiency tests, his "speeding up," would soon drive the men into nervous ruin.

Do the unions restrict output? Since the Government report on that subject, in 1894, they do not so openly advocate the limitation of a day's work. As nearly as one can get at the facts, they do have an effect on lessening the output. Mr. B. A. Larger, secretary of the United Garment Workers of America, said:

"I can say that our unions do not limit output. A great deal of our work is paid for by the piece. However, in all branches some employees work by the week. I have known a few cutters who have become physical wrecks from over-exertion in trying to outdo their fellow cutters. As a rule, union men are satisfied with a fair day's wage for a fair day's work."

Henry Abrahams, secretary of the Cigar Makers' Union of Boston, a quaint and philosophical person, to whom I was referred by a dozen men as one of the best informed union men in Boston, said: "Why should men work as hard as they can for any one or for Society? We are on the piece-work system and are paid for what we accomplish. When we earn a fair wage we are satisfied, and Society and the boss ought to be. I can't blame the men for limiting the output above this reasonable amount, because I fail to see why a man should work harder than he believes is reasonable. I believe in a fair day's work for a fair day's wage. But I do not want a man to work till he is physically exhausted. After all, the wage a man earns determines where and how he shall live and how long his children shall be at school, and how they shall be clad."

The unions feel that in the face of the rising cost of living, the constant introduction of new labor-saving machinery, the use of efficiency methods like the Taylor system, the workman is compelled, more

and more, to exert himself, and that he is justified in limiting his efforts. Especially does the introduction of machinery affect the productivity of labor. And in spite of their protests of neutrality, the workmen find it difficult to treat the new machine as a welcome addition to their shop. President Valentine, of the International Molders' Union, a craft that has had a good deal of experience with the new molding machines, told me:

"We are not opposed to machinery. We know it will come in anyhow, whether we are opposed to it or not. That is inevitable. But we are opposed to being treated as machines and to being measured by machine standards. We have formed a new class of men of those who work on molding machines and admit them to our union."

Isn't it a deal to expect of a man to enthuse over a machine which he sees replace a number of his fellows and do the work of a score or two of men? Yet I have had employers complain to me that their machines often got bad treatment and in some instances didn't even work for some reason or other!

I have not found a single employer, in my own investigations, who did not think that unions, whether consciously or unconsciously, limited the output. I do not say that there are no such employers. I only happened not to find them. And this includes employers who are running union shops and are in collective agreement with their men.

Mr. George T. Kieth, shoe manufacturer of Brockton, Mass., in whose factory the wage agreement is established, wrote to the Massachusetts commission on the cost of living: "There is no doubt that the average workman does not produce quite as much as he formerly did; that is, without any question, labor is restricted to a certain point. . . . I have often been told by my workmen that if they had the opportunity to do just what they pleased they would be glad to do more."

A cotton manufacturer of Fall River, whose mills have an agreement with the unions, says:

"Our experience is that unions tend to reduce output per capita."

Foundries and machine shops were specific in their complaints on this line. In one Eastern shop I was told that in their foundry they were making large cast-iron pulley wheels. The men were making two a day. A test was made and it was found that four could easily be made. But the man who made the test came to his foreman after a few days and said he would have to quit working so fast. The union had fined him $50.

The superintendent of Bliss & Co., Brooklyn, told me that their foundry averaged 1,000 pounds a day per man before the union came in. It was gradually reduced to 500, when the company refused any more concessions, and the fight came. "It is now 1,800 pounds a day and the men make more money than in any foundry we know of, and the work never was better," writes the manager. This is now an open shop, after a bitter strike experience two years ago.

Several stove manufacturers who have agreements with the molders' union and with the polishers told me that, in spite of these agreements, the unions did somehow curtail output.

Some unions have defined a day's work. The lathers of Chicago at one time called twenty-five bundles the limit of a day's toil, and the Chicago carpenters resolved that "any member *guilty* of excessive work or rushing on any job shall be reported and be subject to a fine of $5." The bricklayers of Boston forbade practices that would "jeopardize the interests of a fellow member," like "putting the lime on more than one course at a time." Plumbers must not ride bicycles to or from their jobs.

Let us not be deceived. Love for unlimited output has never characterized the employer when prices were in jeopardy. For instance, I know of a fish company that was prosecuted for allowing great quantities of fish to spoil, in order to keep up the price, while poor people in the cities were crying for cheaper food. And what is the object of "trusts" and pools and monopolies?

In this wage contest, the two parties are looking at the problem from opposite sides; the employer looks at it as a producer, the employee looks at it not so much as a workman but rather as a human being,

a man with appetites and feelings. The one, for a wage, wants to dominate the productive capacity of the other: the other, in spite of the wage, claims the right to domineer his own energy.

The question arises: What does a man owe the company for his wage? As nearly as I can learn, most employers seem to think that the men owe them loyalty, a sort of self-surrender for the wage they get. They feel that they are giving the men more than a chance to work; that they are giving them a living. On the other hand, the wage worker is getting to look more and more upon his relation to the employer as a business relation pure and simple. He is not selling his heart, his devotion, his ambition. He is only bartering his presence and a certain amount of effort for a stipulated wage.

And the public? I have heard business men of large experience and good intellects advocate paying labor all the wages the men could possibly ask, and then raise the price of their goods in order to get the money wherewith to pay the advanced wages. Of course, wages, like everything else, come out of the universal jackpot, and we are all in the game. The Massachusetts State Commission on the Cost of Living in 1910 said that "trades unions cannot be regarded as a factor of any considerable importance in the upward price movement of recent years." The public knows, however, that prices have gone up, in some instances, more than 50 per cent. — and that wages have risen 22.5 per cent. since 1890, and that employers don't seem to be foregoing their automobiles and their trips to Europe.

Of course the public, under the present system of push and pull, is not considered at all. Why should they be? What have they ever done toward bringing on the

VIOLENCE AGAINST VIOLENCE IN THE LABOR WAR

POLICEMEN'S CLUBS AGAINST HOODLUMS' COBBLESTONES, A COMMON EXPRESSION OF THE PASSIONS THAT ARE LET LOOSE BY STRIKES

dawn of a better economic day? The public are not even umpiring this national jugglery in which capital and labor conspire to get what they can, without being too conscientious about what they give.

There is one other item in the price we are paying for the privilege of letting labor and capital fight their battles while we stand by with our hands in our pockets.

What of the workman of to-morrow?

The unions limit apprenticeship? Yes, in some trades, notably the building, metal, and printing trades, and in glass blowing said tainted — with just enough ambition to want to be something more, but lacking the requisite encouragement, in their younger days, to start them right. Here and there an enlightened policy has led a few shops to perfect splendid apprentice schools, like the General Electric Company, at Schenectady; occasionally private munificence has established a really practical trade school, like the New York Trade School; and the continuation school has been adopted, in a modified form, in Cincinnati; while our public schools have

"SCAB! SCAB! SCAB!"

THE HIDEOUS EPITHET BY WHICH STRIKERS DEFINE THE MEN WHO TAKE THEIR JOBS, AND THE MOST EFFECTIVE WEAPON THEY USE. "I HAVE SEEN EXPERIENCED STRIKE-BREAKERS SHRINK FROM THE WORD AS FROM A BLOW"

In a few trades, where only a limited number can find employment, the restrictions are almost prohibitive, on the plainly announced grounds that it would be suicide to overstock the market with trained men.

America has never made a serious attempt, as a nation, to solve the problem of training its youth into industrial efficiency. We have pursued the usual policy of letting the two sides get into each other's hair over wages and hours, while boys were growing up, untaught and untrained, into a status that is no better than slavery, namely, unskilled workmen, touched — I had almost for some time been teaching "manual training," where Johnny learns to make a rolling-pin and tie a blue ribbon on it.

Two years ago the American Federation of Labor published a report on industrial education. It backed a bill in Congress for establishing some sort of coöperation between Federal and state governments for the purpose of giving instruction in "agriculture, trades, and industries, and home economics *in secondary schools.*" The report it issued states: "Organized labor's position regarding the injustices of narrow and prescribed training in selected

POLICEMEN STORMING A STRIKERS' STRONGHOLD

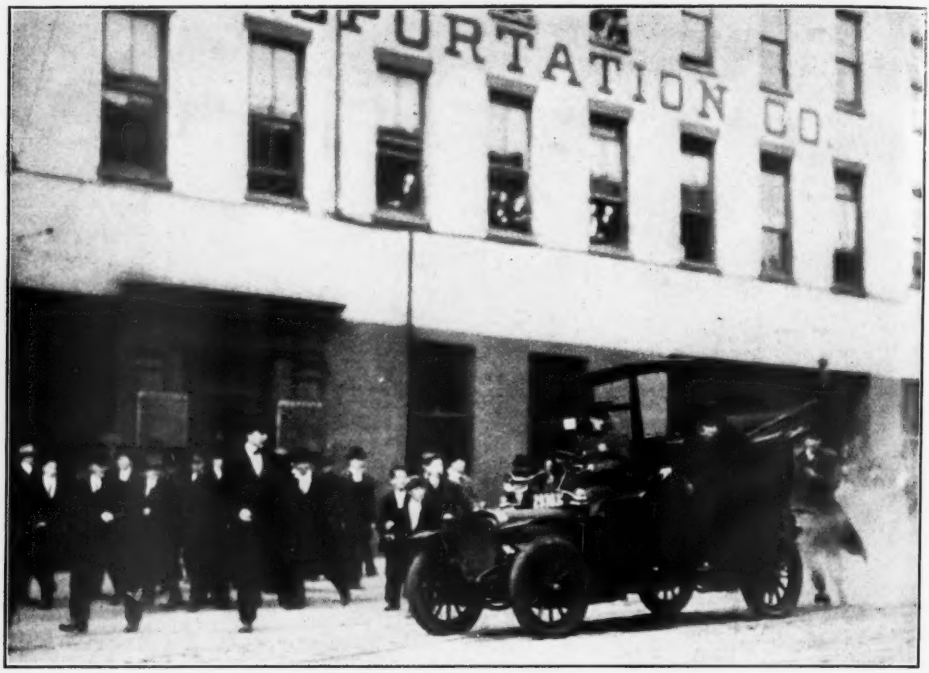
RETURNING PISTOL SHOTS FOR BRICKBATS FROM THE WORKMEN WHO WERE ENTRENCHED IN THE BUILDING

trades, by both private and public instruction, and the flooding of the labor market with half-trained mechanics for the purpose of exploitation, is perfectly tenable."

This quotation hints at the point of friction. The employer, as a rule, wants a youth to become a practical workman as soon as possible. That means a short cut.

PENNSYLVANIA MOUNTED POLICEMEN DISPERSING A GROUP OF STRIKERS

THE REPLY OF THE PEACE OFFICERS TO THE THREATS AND TAUNTS OF WORKINGMEN



ATTACKING A STRIKE-BREAKER IN THE TAXICAB STRIKE
IN NEW YORK LAST YEAR. A METHOD OF "PERSUASION" THAT IS OFTEN USED BY STRIKERS TO PREVENT OTHER MEN TAKING THEIR JOBS

I have been in some shops that give a splendid four years' training. But, on the other hand, there are many employers who take a boy and at the earliest feasible time put him to learning a machine, a lathe, or a drill press, without caring the snap of a finger for his all-around training. This has been freely admitted to me, and some of our great machine shops have recently modified their apprentice system to this hurry-up plan.

On the other hand, the labor unions have their gaze fixed on the labor market, and go to the other extreme. They would not only avoid the "half-trained" apprentice, but would actually limit the number of the well-trained. So they rejoice in what the state will do for secondary schools, but are not enthusiastic for any trade education in the grammar schools.

The public's interest lies in the middle ground: that efficient industrial training shall be denied to none; and that superficial short cuts be abolished.

All this has a bearing on what the older employers called "the vanishing of the craftsman." A majority of the employers with whom I have talked complained that mechanics do not possess the pride in their skill they used to. They say, "Wages, only wages, and hours, occupy their time."

Labor denies this. It points to the machine and asks, "How am I to compete with that?" It points to the American products shipped to all the markets of the world: the American automobile, the American shoe, the American sewing machine, and so on, as evidences of workmanship. And finally it says that the employer is comparing the skill of the all-around mechanic of thirty years ago with the machine driver of to-day.

For thoroughness, European countries have us completely distanced. The hurry-hurry methods of America are deadly to efficiency and thoroughness. The tussle for the world's markets has only begun. Keep your eyes on Germany. Even northern Italy is experiencing a wonderful industrial

awakening. When the genuine test comes, workmanship, durability, will tell the story.

Whatever exaggerations the egoism of the contestants in this war may impel them to make in self defense, the truth remains that Americans glorify speed more than quality. And we, the people, all of us, wage-earners and wage-givers, and the flacculent public, are going to suffer from it. I have failed to find that labor unions are very enthusiastic about craftsmanship. They have few, if any, classes for teaching skill; their trade journals only give casual attention to instruction. I have looked through a great many of them. Occasionally you see an article on the technique of their craft. But the most of the pages are filled with union news. As I said in the first article, the unions are fighting-bodies, not craft guilds.

And the employers? Some complained to me that the "fine old spirit of the American workman of forty years ago had vanished." How about the fine old spirit of the employer of forty years ago?

What can men expect, when they are lined up for a fight, except fists and expletives?

Yet Germany, though in constant labor turmoil, emphasizes skill. The Government compels it through a complete system of trade and technical education; the employer demands it by coöperating with the Government; and the laborer supplies it through his skill, attained, not alone in the schools and shops, but also in his unions, which maintain classes to supplement the schools, provide libraries and lectures, and print trade journals that are filled with instructive reading matter. But these German unions, fighters that they are, have a fundamental precept: "First be a thorough workman, then demand your rights." What effect is this going to have upon the outcome of the struggle for the world's markets?

"THE BLACK MARIA" AS A WEAPON IN THE LABOR WAR

POLICEMEN AND THE PATROL WAGON PRESERVING THE PEACE AND KEEPING TRAFFIC OPEN IN A STREET-CAR STRIKE IN CLEVELAND

EXPLORING OTHER WORLDS

ADVENTURES ON THE FRONTIERS OF SCIENCE

SECOND ARTICLE

DISCOVERIES AMONG THE STARS

(CONCLUDED)

RADIATION, THE COÖRDINATE FORCE WITH GRAVITATION IN THE CONTINUOUS PROCESS OF FORMING AND DISINTEGRATING HEAVENLY BODIES—BOMBARDMENT BY METEORS THE CAUSE OF THE "CRATERS" ON THE MOON—THE NEW THEORIES OF NEBULAR AND SOLAR PHENOMENA

BY

WILLIAM BAYARD HALE

THE discovery by Sir Isaac Newton of the law of gravitation made possible the beginnings of a science of astronomy. Thenceforth it was possible not merely to catalogue the stars and observe their movements, but to frame theories regarding the operation of the world-machine. The principle of gravitation furnished a key to the behavior of the planets, moons, and comets, and threw some light on the movements of bodies beyond our solar system.

But is gravitation the only great law that is at work in the heavens — apart from the ordinary principles of chemistry and physics?

There is a fact about Newton's law which until very recently has almost escaped notice: *it ceases to act when a body grows very small.* As a body dwindles into a mere particle, the proportion of mass to surface diminishes. Gravitation acts on *masses*. *Surfaces* are acted on by another force. There is a point of size below which a body passes out of the domination of gravitation and comes under the influence of another great law.

The other law is that of radiation. Opposed to the force that tends to draw masses together is another force which we may call radial energy, and the effect of this second force is to drive particles away.

It has long been suspected that light exerts pressure. So long as men held the old corpuscular theory of light — namely, that light consisted of actual particles projected in all directions from the source of illumination — it was easy for them

THE GREAT NEBULA IN ORION

THIS GLIMPSE INTO THE STORMY ABYSS OF SPACE WHERE WORLDS ARE FORMING IN THE HEART OF CLOUDS OF STAR-DUST IS THE MOST IMPRESSIVE CORNER OF THE UNIVERSE THUS FAR DISCOVERED BY THE EXPLORERS OF THE SKY

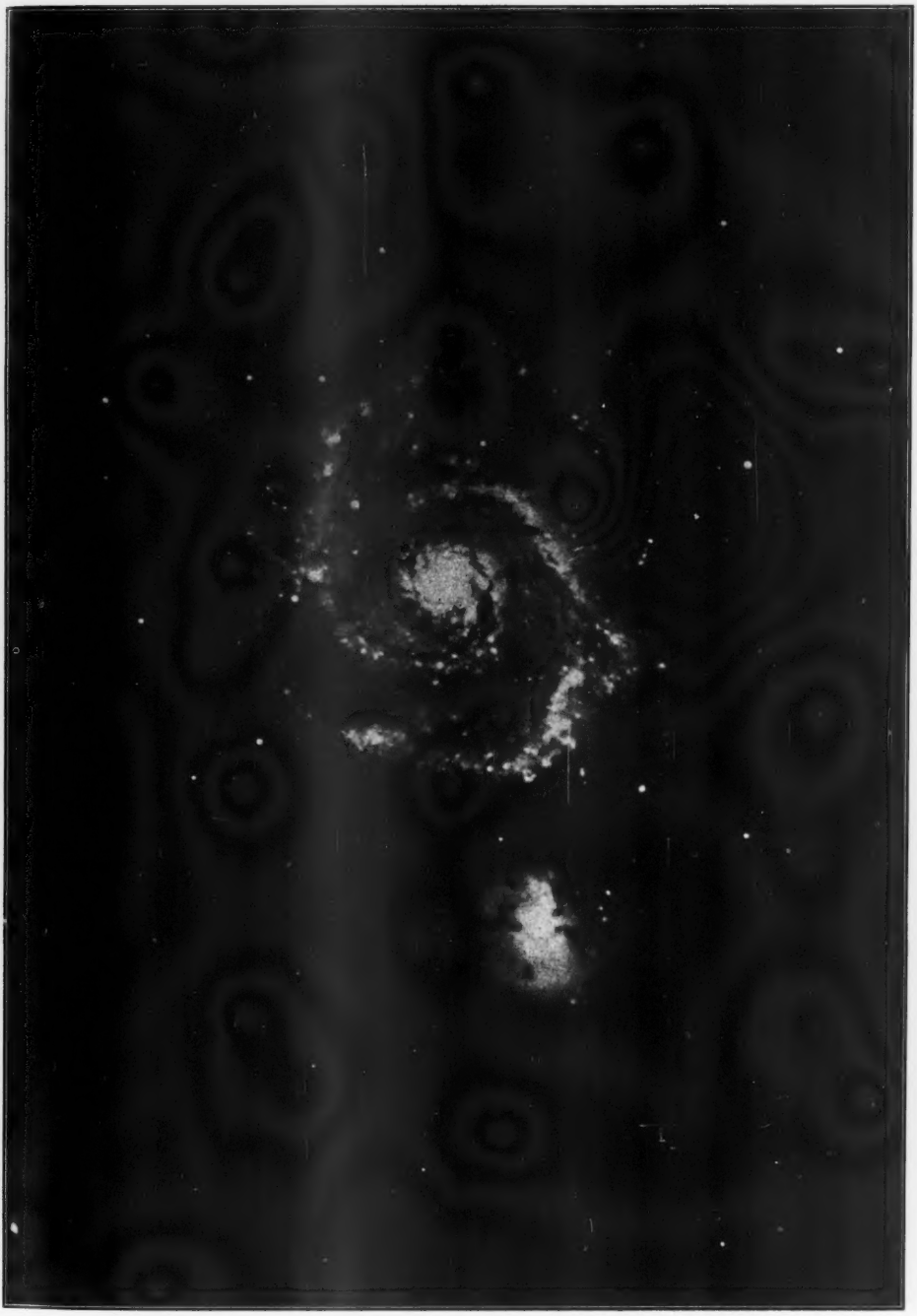
Photographed at the Yerkes Observatory by Ritchey, with the 2-foot reflector

THE GREAT NEBULA IN ANDROMEDA

THE ANDROMEDA NEBULA OCCUPIES AN AREA IN THE SKY THOUSANDS OF TIMES GREATER THAN THAT OF OUR ENTIRE SOLAR SYSTEM, MILLIONS OF TIMES THAT OF OUR SUN. SOME ASTRONOMERS CONSIDER IT NOT A TRUE NEBULA, BUT A PRODIGIOUS ASSEMBLY OF FULLY FORMED SUNS ENORMOUSLY DISTANT, FORMING A SORT OF UNIVERSE ITSELF BEYOND OUR STARS

to think of it as a bombardment. Kepler, who three hundred years ago noticed how the tails of comets are repelled by the sun, theorized that the tails consisted of particles of the comet carried off by the light corpuscles as they hit the sides of the comet. His explanation may be a trifle crude, in the light of modern knowledge, yet he was essentially right.

Even after the wave theory of light had



Photographed at the Mt. Wilson Observatory

THE SPIRAL NEBULA IN THE HUNTING DOGS

THIS IS THE NEBULA WHOSE SPIRAL FORM WAS FIRST DISCOVERED IN 1845. LONG CONSIDERED UNIQUE, IT IS NOW KNOWN TO BE TYPICAL OF AN IMMENSE NUMBER OF OBJECTS WHOSE STUDY HAS GONE FAR TO BRING ABOUT A NEW ERA IN ASTRONOMY

AN UNUSUAL VIEW OF A SPIRAL NEBULA

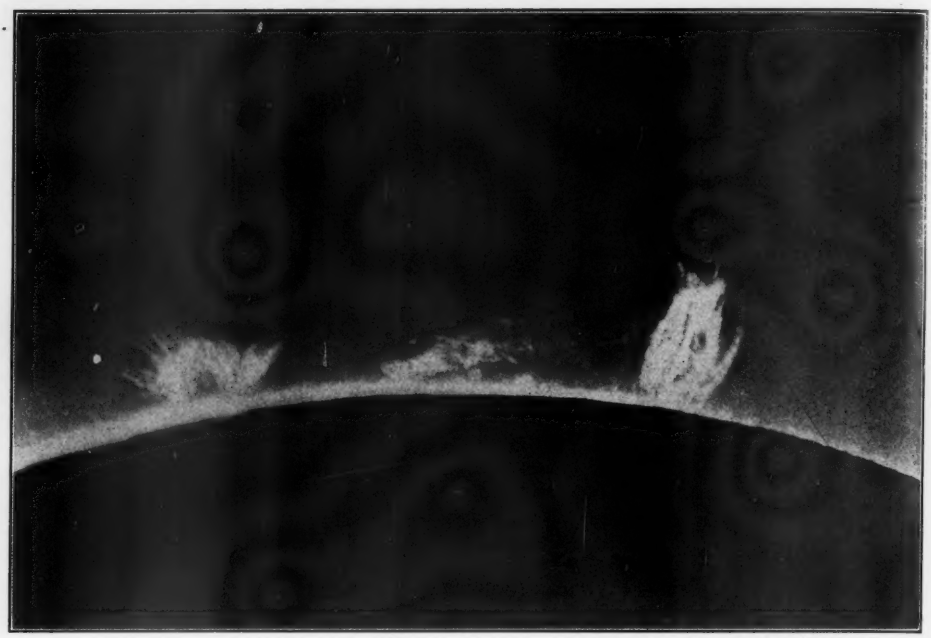
THIS BEAUTIFUL PHOTOGRAPH SHOWS A SPIRAL NEBULA IN PROFILE. THIS VIEW MIGHT BE TAKEN FOR THAT OF A SUN WITH RINGS LIKE SATURN'S, BUT OTHER PHOTOGRAPHS REVEAL THE TRULY SPIRAL CHARACTER OF THE STAR-DUST CLOUD OUT OF WHICH THE SUN IN THE CENTRE IS EVOLVING

been generally adopted, there were those who continued to believe that the rays carried a sensible push — exerted pressure where they fell. Euler, away back in 1746, fought for this belief. Since his day, Maxwell, Bartoli, Lebedeff, and Arrhenius have cherished it. But it was left to two Americans, Nichols and Hull, to establish beyond all denial the practical importance of radiation pressure.

Photographed by Barnard

THE CLUSTERING OF STARS IN THE MILKY WAY

A VIEW OF THE NEBULOUS REGION NEAR ALPHA CYGNI, ILLUSTRATING T. J. J. SEE'S CAPTURE THEORY. NOTICE THE GULFS OF COMPARATIVE DARKNESS THAT SURROUND THE CENTRE WHERE THE CAPTURE PROCESS IS GOING ON



Photographed by Barnard and Ritchey, May 28, 1900

SOLAR "PROMINENCES" SEEN DURING AN ECLIPSE

THE SUN, IN THIS PHOTOGRAPH, IS COMPLETELY HIDDEN BEHIND THE MOON. THE RIM OF BRIGHTNESS IS THE CHROMOSPHERE, THE SUN'S GASEOUS ENVELOPE, AND THE PROMINENCES ARE RED FLAMES OF HYDROGEN AND HELIUM. THEY FREQUENTLY REACH A VISIBLE HEIGHT OF SEVERAL HUNDRED THOUSAND MILES, BUT INVISIBLY EXTEND TO THE FARTHEST CORNERS OF THE UNIVERSE

Nichols and Hull mixed puff-ball dust with emery powder, placed the mixture in the upper chamber of an hour-glass from which the air had been exhausted, and let it sift through; the grains fell perpendicularly, as sand would have fallen. Then, reversing the glass, they directed upon the falling stream the light of an arc-lamp concentrated through a lens. The emery powder fell perpendicularly as before, but the particles of puff-ball powder were driven against the side of the glass farthest from the light. Gravitation had its way with the larger masses, but the pressure of the light dominated the tinier particles of dust.

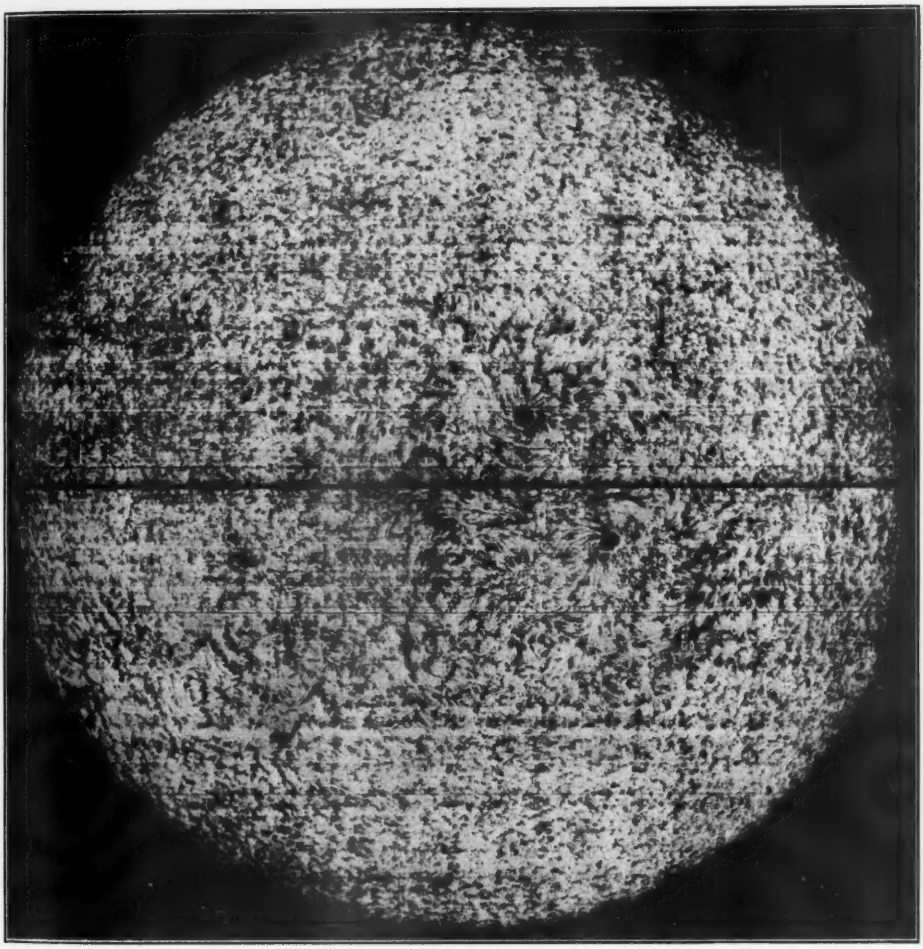
Partly for convenience and partly out of ignorance, we may talk of this radial energy as the pressure of light. Light-rays are the most easily recognized emanations, but, of course, we know that they are but a single class among many classes of rays. The study of the properties of the Crookes tube gave a widened knowledge of radiant energy, and the discovery of radium has startled the world into a realization of the immense importance of the part in the constitution of things played by radio-activity. There is no space here even to sketch in passing the revolution in all scientific thought touching the ultimate nature of matter and the laws of physical energy which in the last few years the new knowledge of radiation has wrought. It is only possible to say that whatever it has done in the field of chemistry and physics, it has done more in that of astronomy. This, then, seems not too much to say of radiation:

The great new fact in the study of the stars is that this radiation pressure is at work throughout all the universe, the second, complementing, and completing principle of the two principles one of which Newton disclosed. Just as the pull of gravitation is everywhere drawing masses together, so everywhere the push of radial energy is

driving particles away to the farthest confines of the universe.

Gravitation predominates in the case of masses: radiation in the case of minute particles. It is possible to calculate the size of the particles (corpuscles, spherules) which at a given position in the universe will be pulled or be driven, and many such calculations have been made within the present century. Naturally they are too technical to be more than alluded to here. It is enough to know the Big Fact — that, corresponding to gravitation, there is a second cosmic force, radiation, and out of the two the New Astronomy is evolving a consistent and comprehensive account of the processes going on in the sky.

Let us observe radiant energy at work in the heavens — for we can see it clearly. When the sun is in eclipse, so that its face is hid behind the moon, we see gigantic banners streaming away into space. They are streams of particles carried away in the sun's radiation — typical of a process which is repeated on every star. Our sun (as may be seen at any eclipse) is surrounded by a halo of corpuscles — the corona — driven from his mass by radiant



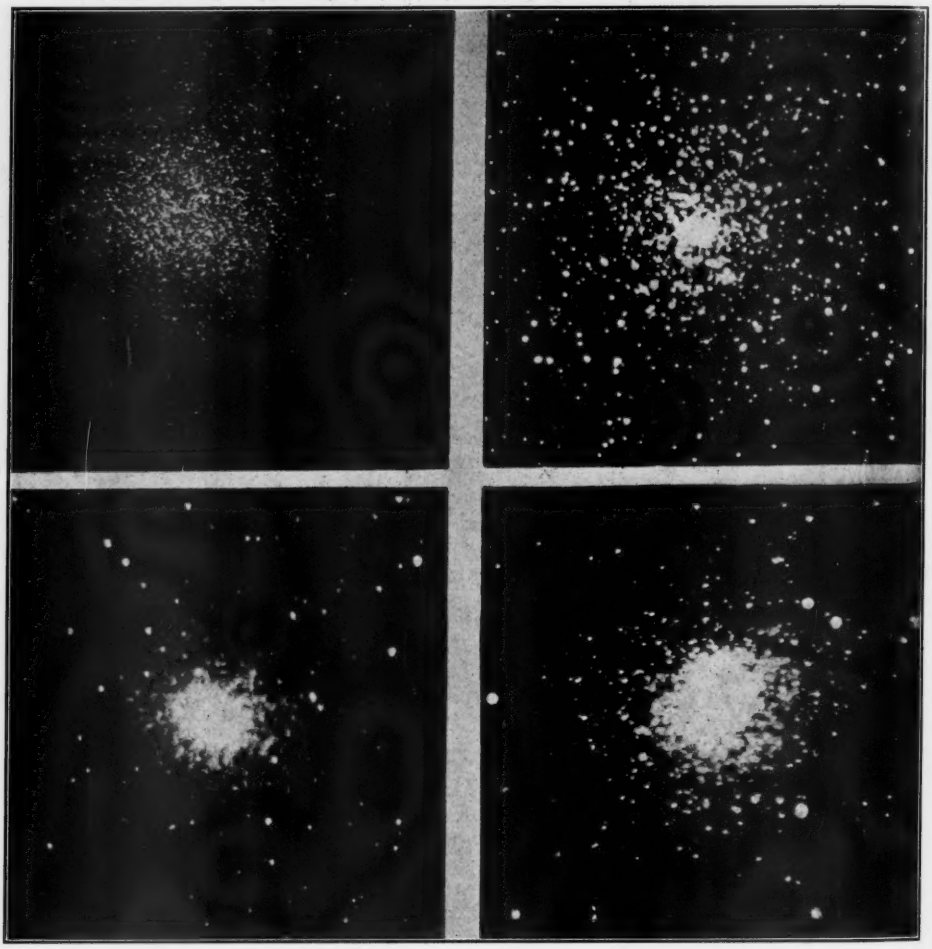
"SUN-SPOTS" REVEALED AS ELECTRICAL CYCLONES

A PHOTOGRAPH OF THE CHROMOSPHERE (THE SUN'S ATMOSPHERE), MADE BY MEANS OF DR. GEORGE E. HALE'S SPECTROHELIOGRAPH AT THE SOLAR OBSERVATORY ON MT. WILSON, CAL. THIS AND SIMILAR PHOTOGRAPHS PROVE THAT THE SUN IS A VAST ELECTRICAL FURNACE

energy, and disappearing from our view only as their volume grows attenuated in dispersion. The so-called tails which comets develop as they near the sun, and which always stand away from the fiery centre, are, much as Kepler guessed, corpuscles driven away from the comet's

as they are discharged, and glow with electrical excitement.

It is in this condition that star-dust, hanging suspended in our atmosphere, after journeys perhaps from our sun, perhaps from stars immensely farther away, reveals itself in the Aurora Borealis.

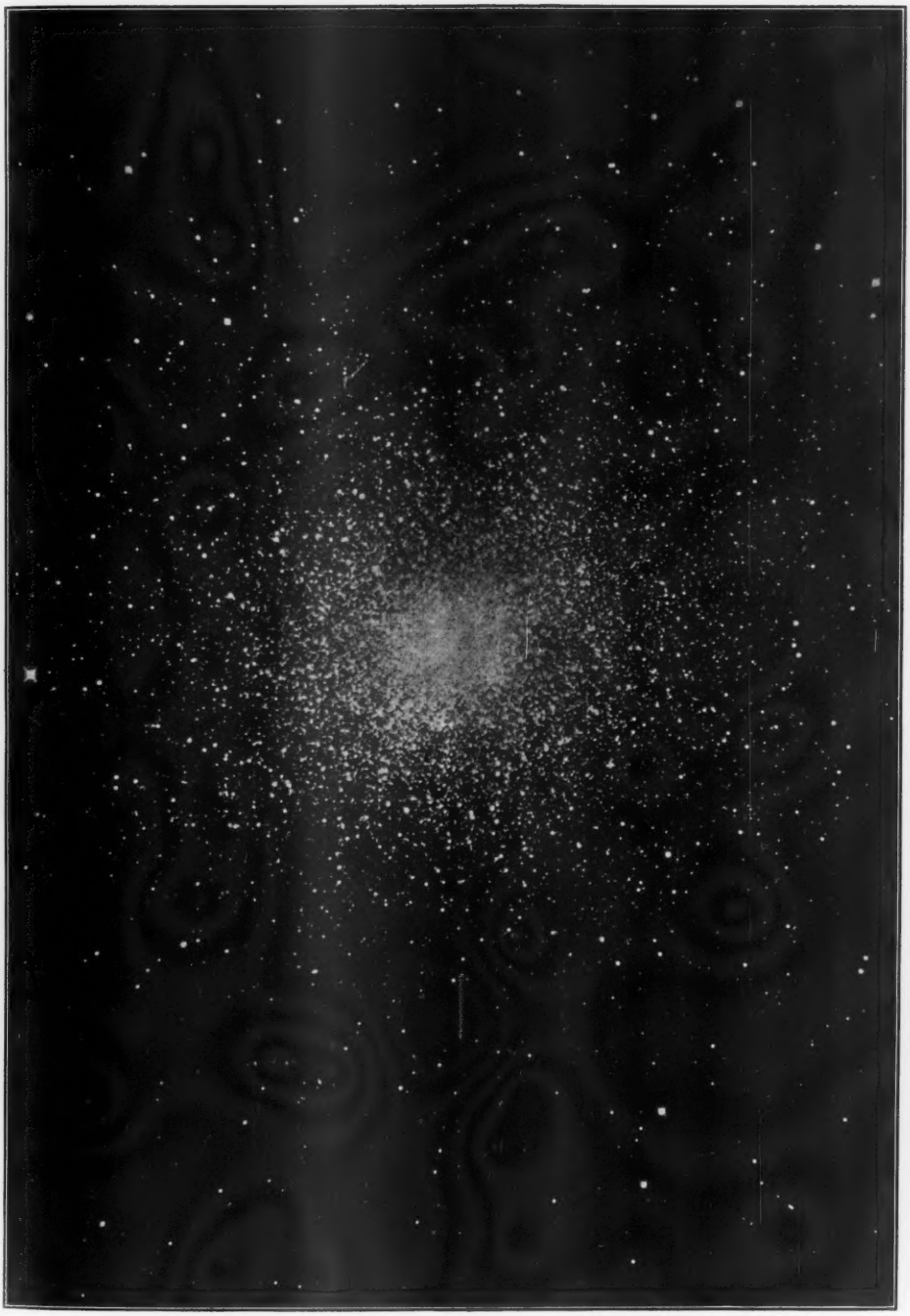


NATURE'S CENTRALIZING TENDENCY ILLUSTRATED IN FOUR GREAT "STAR CLUSTERS"

IN THE CONSTELLATION OF CENTAURUS (UPPER LEFT), OPHIUCHUS (LOWER LEFT), PEGASUS (UPPER RIGHT), AND AQUARIUS (LOWER RIGHT). THE HEAVENS ARE CROWDED WITH SYSTEMS LIKE THESE

core by the radiation pressure beating upon the venturesome visitor. It is possible that the visibility of the fiery particles is due only to the illumination which falls upon them from the sun, but probably, at least in many situations, the particles are electrified, "ionized,"

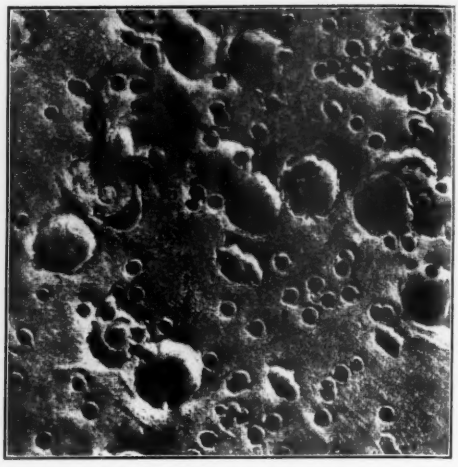
The careful studies of the Aurora made by Arrhenius leave doubt no longer possible as to the cause of this atmospheric phenomenon. It is dust from far-off stars that causes the Zodiacal Light, seen in the tropics almost any clear evening or early morning. The ruddier glow of the



Photographed at Mt. Wilson Solar Observatory

A TYPICAL STAR CLUSTER IN HERCULES

AN ILLUSTRATION OF THE TENDENCY OF STELLAR MASSES TO COME TOGETHER UNDER THE INFLUENCE OF GRAVITATION. THE UNIVERSE WOULD EVENTUALLY COALESCE WERE IT NOT FOR THE OPPOSITE FORCE OF RADIANT ENERGY WHICH TENDS TO DISPERSE MATTER IN THE FORM OF MINUTE PARTICLES.

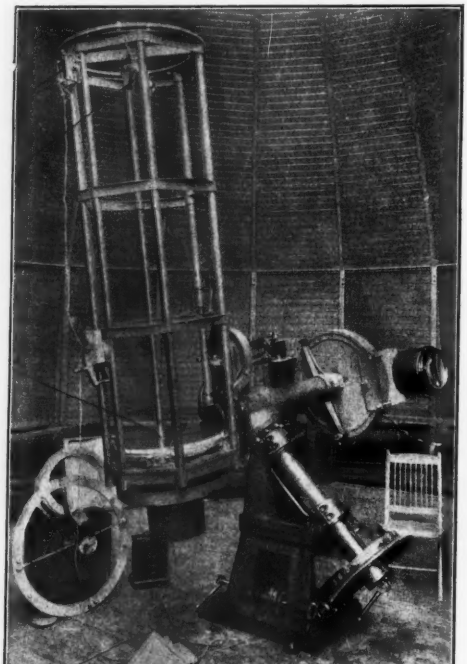


THE MOON'S CRATERS MADE BY METEORS

ONE OF THESE PICTURES IS A PHOTOGRAPH OF A SECTION OF THE FACE OF THE MOON; THE OTHER, A PHOTOGRAPH OF A SHEET OF LEAD INTO WHICH BULLETS HAVE BEEN SHOT

sun morning and evening, and the golden glory of the moon when it is near the horizon rising or setting, are in part due to the particles of cosmic dust falling on the earth. It is when the sun is low that the saturation of the atmosphere can best be detected.

After the volcanic explosion of Krakatua in 1883, and to a lesser degree after that of Mt. Pelée in 1902, unusually red sunsets and sunrises were noticed all round the globe. An immense amount of matter was, in each of these catastrophes, shot into the air, there to hang suspended for months. In the same way, much dust brought by radio-activity from the stars hangs in the upper air. The finer particles do not immediately reach the earth's surface, trickling down through the atmosphere gradually.



THE YERKES 24-INCH REFLECTOR

THE STARRY IMAGE FALLS UPON THE SPECULUM (THE CONCAVE MIRROR) AT A, AND IS REFLECTED BY THE SMALL MIRROR AT B INTO THE CAMERA ATTACHED AT C

Some of this star-dust reaches us in recognizable masses — in the form of "shooting-stars" and meteors. In most cases, these brilliant apparitions are accretions of particles carried away from the stars by radiation. Floating about in space, when the impulse that swept them away is exhausted, some of these particles collide and collect. In other cases, no doubt, the meteorites have had a long life-history before they came to us; some of them are fragments of disrupted comets.

Everybody who even occasionally watches the sky knows that "shooting-stars" are extremely common; every hour sees a dozen, and at times they fill the air like snow-flakes. We are in a continuous bombardment from the stars. One calculation based on timed observations, made by H. A. Newton, reaches the conclusion that 16 million meteorites enter the earth's atmosphere every twenty-four hours. By far the most of them are so minute that they are consumed before they reach the ground, though about one thousand do that every year, some of them of considerable size. The meteorite that Peary brought down from the North weighs more than thirty-seven tons. There have probably been much larger ones.

Not far from Flagstaff, Ariz., is a remarkable crater-like depression. The rim of it, rising about 140 feet above the plain, can be seen from the railroad, passing Cañon Diablo. The depression has a diameter of about three quarters of a mile, and the bottom is 500 feet below the top of the rim, 350 feet below the surface of the plain. No one can look upon this remarkable phenomenon without thinking of the "craters" of the moon.

But there are no signs of volcanic action ever having taken place in this region; the thing is out of the question. The "rim" piled around the crater has not come from the interior of the earth, but is composed of sandstone rock, which in some way has been lifted above the plain. Some of the great masses of this sandstone have apparently been highly heated and crystallized, but most of the rock has been crushed and shattered. The whole neighborhood is sown with meteors. The local dealers have done a flourishing business in meteoric iron for years. One meteoric block weighing one thousand pounds is now exhibited in the Chicago Museum.

Of course that there are veritable craters of lunar volcanoes now extinct is still the popular belief, as it was twenty years ago the best scientific idea. No astronomer to-day believes that the rings on the moon's surface are craters in anything but name. One has only to note the effect of rain-drops on a pool of mud or of bullets shot at a disc of lead to conclude that the lunar "craters" (see page 296) were made by meteorites, at a period when for some reason the moon was being vigorously bombarded.

As for the earth to-day, it is receiving from the sun alone, Arrhenius calculates, 200 tons of radiated matter every year. But it is not from our sun alone, it is from the myriad stars that there come to us constant ejections of matter. Appelzer of Vienna has calculated that 218 million tons of cosmic dust fall daily upon the earth. The earth alone! If this calculation represents anything like the truth what prodigious, what inconceivable, quantities of star-dust exist in space!

That we on the earth feel the play upon it of streams of star-stuff, even as under certain conditions we see evidences of them, is a conclusion to which modern astronomy has come. For instance, the earth is not stable to its poles. As early as 1885 astronomers found that latitude on the earth was not fixed. Seth C. Chandler, an American, first tentatively, in 1891, and later positively, observed the latitude of Cambridge, Mass., and proved that it vacillated.

Every possible theory has been adduced to account for this astonishing fact. It has even been suggested that Gravitation is not a constant force; i.e., that its pull is weaker at times than at others. So monstrous a hypothesis cannot be entertained. It is far more reasonable to believe that the earth is meeting resistance as it moves through space; such resistance would be supplied by the streams of meteoric dust that we know falls upon it. The moon fluctuates in its movements: its motion is frequently accelerated. This also has been a great perplexity to astronomers. Streams of cosmic dust playing against it irregularly give a sufficient explanation.

Of course, the idea of vast clouds of nebulous matter existing in space is not new. The novelty of the present-day conception lies in its knowledge of the colossal extent of nebulosity, the proportion it bears to the rest of the universe, and the location of its prevalence with regard to the systems of "solid" suns. Even

Laplace was by no means the first to suggest that the solar system arose out of the evolution of a nebula, though his theory of the process was so striking for the imagination that it has fascinated mankind to this day.

Laplace's hypothesis began by assuming a rotating nebulous mass, or fluid. As the heat of this nebula radiated into space, it slowly contracted. It is a law of physics that, as the mass of a rotating body diminishes, it rotates more swiftly: accordingly, the nebula shrunk, spun more rapidly, and as it spun, flattened out, until finally it became a mere disk. Then, a ring of fiery vapor was flung off, centrifugal force becoming greater than gravity; then, more rings. The rings broke up, condensed, and shaped themselves into separate globular masses — the planets; in turn some of these shed rings, which in turn condensed into moons. Laplace's hypothesis explained beautifully how it happened that the planets revolved in the same general direction and in the same plane, and why the moons did the same.

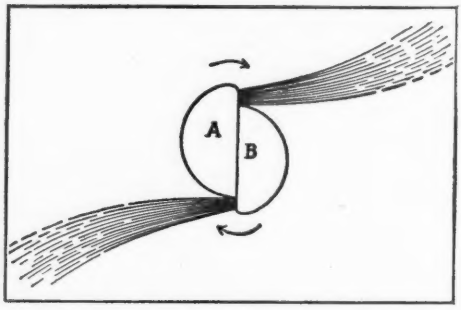
Unfortunately for the hypothesis, however, celestial explorers since Laplace have had to report the truth that the outer planets, Uranus and Neptune, rotate in the wrong direction, as do the outside moon of Saturn and that of Jupiter. Unfortunately, also, we have now learned that the comets, whose orbits follow every degree of eccentricity, belong to the solar system. (It is only since Christmas night, 1758, when Halley's comet came sailing in from the oceans of space like a faithful ship from a cruise at sea, that we have been certain that the comets belonged to the sun.) Unfortunately, also, it has been demonstrated that rings thrown off from a rotating disk would condense, if at all, not outside the disk, but somewhere near its centre. Still more unfortunately, modern astrophysicists cannot admit the existence of a nebula with a high temperature. The glow of the nebulæ is sometimes a reflection of external illumination, sometimes the effect of internal electrical excitement. The gaseous nebulæ are ice-cold. Finally, the extensive travels among the nebulæ that have now been accomplished by the great modern telescopes show that the star-clouds which Laplace thought to be spherical or lenticular, and not only those but thousands more which Laplace never knew, are really spiral in form. The great nebula in Andromeda, long held to be an illustration of the Laplace hypothesis, is now distinctly seen to be, not a disk, but a spiral.

The spiral nebula being, with the more or less solid globe of star and planet, the prevailing form in celestial nature, living astronomers assume it as the earlier form of matter out of which worlds are evolving.

But what is a spiral nebula?

Manifestly, it is a meeting-place of two opposed forces, two streams of star-dust, or, possibly, of two suns.

What would happen if two suns collided? It is a problem that has always fascinated astronomers; there have been many narratives of the imagined catastrophe. The account at present received with the most respect is that formulated by Messrs. Chamberlain and Moulton, the former a distinguished geologist, his colleague an astronomer.



ONE THEORY OF A STAR COLLISION

GREAT STREAMERS ARE EJECTED, AND A SWIFT ROTARY MOTION IN THE DIRECTION OF THE CURVED ARROWS IS SET UP. SOMETHING LIKE A SPIRAL NEBULA RESULTS

The Chamberlain-Moulton theory is that if one star approached another, the pull of Gravitation would draw out from each protruding arms. Attraction might act so much more strongly on those surfaces of the stars which were nearest each other that the stars would be disrupted; great masses would be pulled away; and, the hot interior being suddenly exposed to the cold of space, new gases would be

formed and those already inside be released. The two stars might explode to fragments. Of these fragments some part would go so far out into space as to wander for millions of years until attracted by other bodies; some would collect, through mutual attraction, about the centre of the catastrophe, in a loose rolling spiral gradually solidifying into suns and planets. If the two approaching bodies were not solid, but fluid or gaseous, there would be no explosion, but the pull of mutual gravitation would draw out great flaming arms. The blazing bodies would wind their fiery arms around each other. Probably nothing would be lost to outer space, in this case, but all kinds of motions and countermotions would be set up in the whirlpool of their atoms, which would finally settle down into a rotating spiral.

The theory has been pretty thoroughly demolished by Prof. T. J. J. See, so far at least as it concerns collision of anything like solid bodies. Dr. See shows that the spiral nebulæ are not found in those parts of the heavens in which, according to the theory, they should be found; that is, where the stars are thickest and collisions would be most likely. It is just there that the nebulæ are most infrequent. Again, the probabilities against collisions are so vast that it is impossible to believe that the great orderly universe depends upon such catastrophes for its existence. (Poincaré estimates that the visible universe contains 100,000,000 suns. Yet he thinks that the chances are that one of them could traverse the Milky Way 16,000 times without a collision. Arrhenius calculates that our sun would require a million million years to come into collision with another. Supposing that there are a hundred times more extinct stars than luminous ones [which is probably the case] it would probably be only ten thousand million years before our sun strikes another.) Yet again, the double stars, not to mention many other quietly associated objects in the sky, afford abundant evidence that Gravitation is not strong enough to accomplish such a cataclysm as Chamberlain-Moulton expect; what we do see exemplified over and over in the sky, declares See, is that when bodies come within range of each other's pull, they set up a peaceful relationship under which they revolve one about another or quietly capture one another.

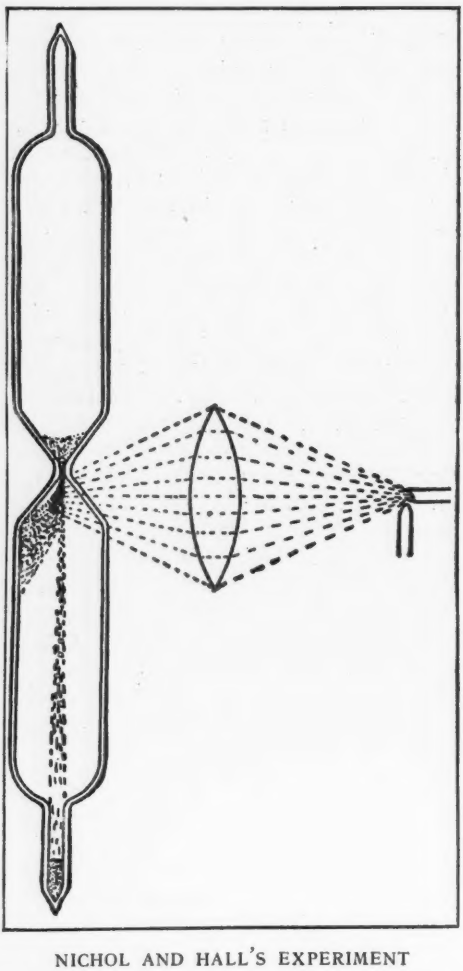
Dr. See is the proposer of what he calls the Capture Theory. The complete cosmogony which this most indefatigable and intrepid of explorers has built up could not be justly set forth in an article so brief as this. Not, at this point, to speak of his demonstrations of the importance of Radiation, or to go into his commanding exposition of the eternal circle of creation displayed in the starry world, it may be said at this point that See holds the creation of masses to have been everywhere a process of accretion. Planets and moons and meteors and asteroids and comets are not things that were thrown off: they are things that have been gathered up. The clustering, centralizing force of Gravitation is ceaselessly and triumphantly at work everywhere. Nebulous masses drift into the presence of other nebulous masses; and the two flow together into a spiral. Knots gather within the spiral; concentration builds up sun-centres; neighboring knots glide into the influence of the suns, becoming planets; or the suns draw together into binaries, triple or quadruple star-systems, or great star-clusters. Smaller solid masses from outside space break into the system; they are captured, as moons, asteroids, comets. Sometimes the capture is complete, and the smaller body falls into or upon the larger; sometimes the smaller is merely brought within the radius of the gravitational pull of the captor, and kept rotating a prisoner within what mathematicians know as "Roche's closed space."

We see the process going on around us; within the observation of recent astronomy, for instance, we have seen Jupiter capture comets away from the sun. Our moon is a small planet which has been captured from the sun by the earth.

The tiny particles of star-dust that fill space alone are not subject to Gravitation; they constitute a resisting medium for all moving masses and thus assist in the work of concentrating the masses, helping Gravitation round up and reduce the orbits of the monarchs that seem to range through space with such majesty, but which are

all being drawn in and in to a centre the attainment of which would mean the extinction of all movement, the death of the universe.

And why is that centre not attained? Why will it never be attained? Newton was so overcome by this sense of the irresistible power and ultimate aim of Gravitation that he declared that only the special interposition of Almighty God could save the universe from the final ghastly death of coalescence. What hope of continued existence is there apart from such a special divine act?



NICHOL AND HALL'S EXPERIMENT

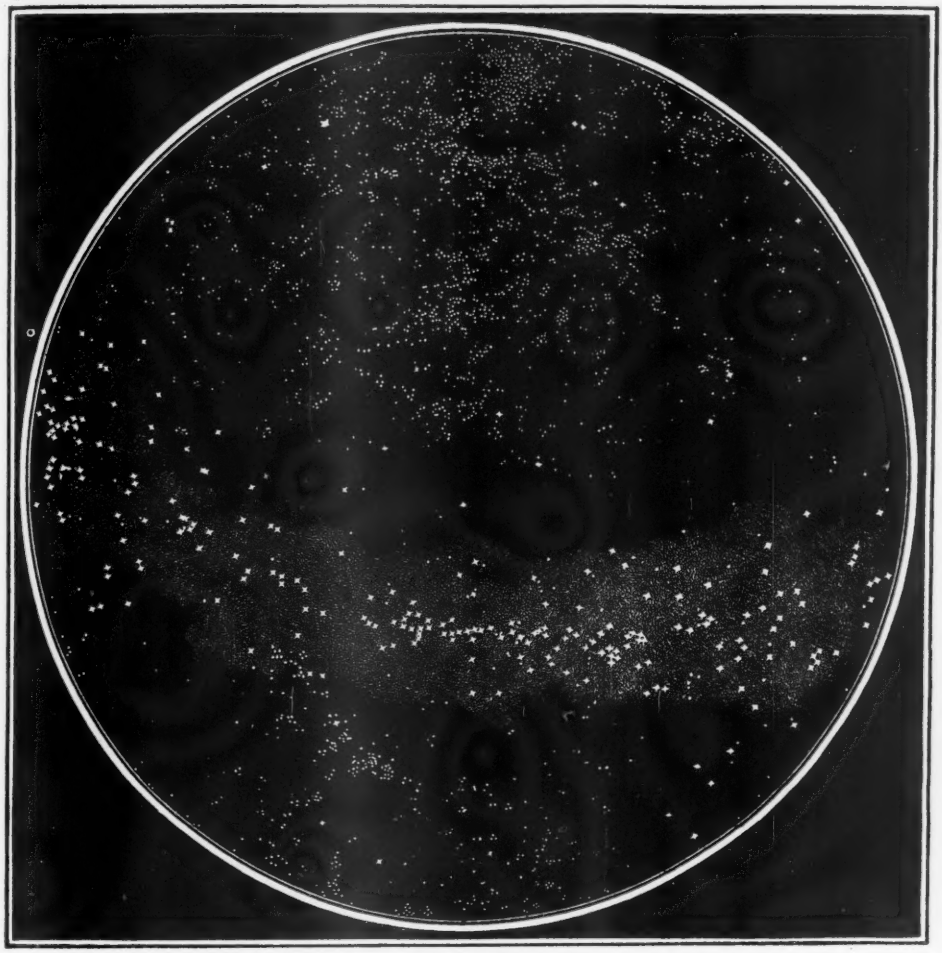
THE PRESSURE OF LIGHT FROM AN ARC-LAMP FORCES PARTICLES OF FALLING DUST AGAINST THE SIDES OF THE TUBE. SEE PAGE 292

The hope, the asurance, lies in the fact that the *great power that Newton made known is eternally being compensated for by another force which is ever at work scattering matter in the form of minute particles. Gravitation is counteracted by Radiation.* Everywhere the large masses drift toward their most powerful centre of attraction, while fine dust constantly being expelled from the stars produce nebulæ in the vacant regions of the heavens; and this concentration of the large masses under gravity, and the redistribution of the fine dust by the action of repulsive forces, is the great law of nature which preserves the order of the starry heavens.

We are now prepared to see the significance of the star-map on page 301. It is a projection made by Sydney Walters from Sir John Herschel's catalogue, showing the heavens as seen in the Northern Hemisphere. The belt is the Milky Way, or Galaxy, with its myriad of stars — a sort of equator of the sky. The crosses are star clusters. Round dots are nebulæ.

How surprisingly definite is the fact, which a moment's study of the map reveals, that the star-clusters are practically all concentrated in the plane of the Milky Way; that the nebulæ are gathered at the poles of the sky; while between the nebulous regions and the Milky Way equatorial belt lie, on either side of the belt, strips of comparative darkness.

Now, the Milky Way is precisely what it appears to be — it is the region, the direction, in which the stars are thickest and furthest extended. The visible universe is shaped somewhat like a lens. The earth is in the thickest part. When we look at the Galaxy, we look from the centre toward the edges of the lens; when we look to the right or left, we gaze out toward the sides of the lens. The latest conclusion — and it is a positive one — from the results brought home by the explorers of the heavens strangely enough merely confirms what might be the impression of a child or a savage looking up into the sky: The stars are vastly thicker and extend vastly farther out into space up in the direction of that great white band that stretches from the Northeast to the Southwest than in any other direction. The



GRAVITATION AND RADIATION SEEN AT WORK

THIS IS A MAP OF THE SKY OF THE NORTHERN HEMISPHERE. THE SMALL CROSSES DENOTE STAR-CLUSTERS. DOTS REPRESENT NEBULÆ. NOTE THAT THE STAR-CLUSTERS LIE IN THE MILKY WAY, ALMOST EXCLUSIVELY. NOTICE THAT TWO STRIPS OF COMPARATIVE DARKNESS LIE NEXT TO THE MILKY WAY. NOTE AGAIN THAT THE NEBULÆ ALL GATHER AT THE POLES. WE SEE HERE THE CLEAR EFFECTS OF THE TWO GREAT FORCES THAT CREATED THE UNIVERSE AND THAT KEEP IT IN EQUILIBRIUM: GRAVITATION, WHICH DRAWS MASSES TOGETHER, AND RADIATION, WHICH IS CONSTANTLY DRIVING PARTICLES OUT INTO SPACE. THE WORLD-PROCESS IS THE CONTINUAL TRANSFORMATION OF NEBULÆ INTO STAR SYSTEMS AND OF STAR SYSTEMS INTO NEBULÆ, AN ENDLESS CIRCLE OF CENTRALIZATION AND DISPERSION

luminous masses that make the Great White Way of the sky are clusters of suns, moving in processions of unspeakable grandeur — moving, to come closer home to the truth, not as a lenticular disc might revolve, but in *two streams flowing in opposite directions, two belts wound like the arms of a starry spiral.*

Looking away from that double stream of light, to either side, the eye of the simplest observer will notice that, just as the map shows, the regions lying to right and left are poor in stars, though the luminosity increases somewhat toward the poles North and South — the fields where lie the great white spiral nebulæ.

What we are beholding is nothing less than the Twin Laws in operation; Gravitation bringing together the great masses in systems of clustered stars in a concentrated zone;

Radiant Energy expelling the tiny corpuscles to the far frontiers, again to be built up into stars, as Gravitation reasserts its force; and again, in the passage of ages, to be resolved into dust.

Such is the Cosmic Cycle. We may agree with one or another of the cosmogonists, accept one or another of the many accounts of the details by which the star system and systems of systems arose — not yet are the details of celestial mechanics certain — but we may not doubt the principle, now clear, that underlies them all. The incessant expulsion of dust from stars to form nebulæ, with the condensation of nebulæ into stars and the stellar system, is the order of the universe. It is by means of this infinitely beautiful compensation that the world-process can continue in an eternal cycle, for which there is neither beginning nor end.

TAXING THE COST OF LIVING

HOW THE GOVERNMENTS OF ALL CIVILIZED NATIONS, BY SPENDTHRIFT EXPENDITURES, ARE SADDLING THE WORLD WITH INTEREST-BEARING DEBT AND THEREBY ARE DEPRECIATING THE VALUE OF MONEY — THE RELATION OF ARMIES AND NAVIES TO THESE DEBTS

BY

DAVID STARR JORDAN

(PRESIDENT OF LELAND STANFORD JUNIOR UNIVERSITY)

I WISH to call attention to one of the causes of the rise in the cost of living: that is, the increase of taxation the world over, due to the world-wide increase of war-waste and debt.

In most discussions of the "Cost of Living," five or more different phenomena are more or less confused. These are (1) the "cost of high living," (2) the insistence on comfortable living on the part of the American people, (3) the increased cost of living in a new and rich country, (4) the cost of the protective tariff and of the interests that find shelter behind it, and (5) the rising price of all articles as measured in terms of gold.

This last is necessarily accompanied by a rise in interest rates during the period of transition to price levels. This in turn leads to a fall in value of government bonds and other securities bearing a low rate of interest. And this fall in the purchasing power of gold constitutes the real problem. The others are merely local incidents.

But the rising cost of living affects all parts of the civilized world more or less in the same way. It is most distressing in those regions where the body of the people are nearest the bread line, but it is just as real in other regions. The actual rise in cost may be greatest in amount when progress is greatest, as some have claimed, but it is no greater in its effect on the people. It has been asserted that it is most felt in Japan and in America. In Japan it causes greatest distress. In America most fuss is made over it. But it is just as definite everywhere else.

That similar conditions exist the world over is a matter of common knowledge. In a recent address before the United States Senate, Mr. Burton has gathered statistical records and consular reports which show that a steady rise in nominal values of nearly every staple of life has been going on for about fifteen years, or since 1897. According to Mr. Burton, the cost of a year's rations in the United States Army in 1897 was $45.62; in 1900, $63.87; in 1912, $86.32. The "Englishman's dollar," according to Sauerbeck, with a purchasing power of 100 cents in 1897, fell to 97 in 1898, to 83 in 1900, to 86 in 1905, and to 78 in 1908. The American dollar, more nimble in its de-

cline, fell from a level of 100 cents in 1897 to 96 in 1898, 81 in 1900, 77 in 1905 and 70 in 1911.

The average increase in ten years in those staple foods which cover the needs of the working men is about 50 per cent. The reports from other nations indicate the same general increase of retail cost. It is necessary, therefore, to seek an equally world-wide cause.

To ascertain the cause, we must first analyze our problem and eliminate those factors which are due to other than world-wide causes or which were equally effective more than fifteen years before.

Mr. James J. Hill has said that the problem is not that of the "High Cost of Living," but of the "Cost of High Living." The automobile, for example, is a costly tool, a costly toy, a costly method of gaining or regaining health. Many a house has been mortgaged to pay for an automobile. To live in general in a fashion typified by the automobile is high living and high living the world over is and always has been costly.

But the men who own automobiles find a way to pay for them. They could not keep them long on any other terms. Their use may wear out the aggregate of national wealth, but it does not wear out my wealth if I do not own one. That you own an automobile makes me none the poorer, unless the machine in some way gives you power to dodge taxes or in some other way to oppress your fellows. The automobile becomes an economic factor, mainly as the effort expended in building them is taken from other and more useful lines of effort. The growth of fine hotels, parallel with our growing wealth, does not itself make the things I buy more expensive, if I do not buy them in an expensive place. The extended use of automobiles tends to make automobiles cheaper, and the use of luxuries widens the range of industrial operations. The cost of high living falls on the man who lives high. It does not raise the cost of rice in Japan above the reach of the farmer who creates it. The high prices he receives avail nothing if tax burdens rise still higher. There were in 1911 only about two hundred automobiles in Japan, and the nation has not even built roads over which these may be run.

High living has extended itself largely over our country since 1897 in conformity with the general prosperity, in which the people at large participate more fully than is the case in Asia or in Europe. And broadly speaking the cost of high living is an American affair. The rest of the world has taken little increased part in it, but they have suffered equally from the continuous rise in cost of luxuries as well as of necessities.

COST OF COMFORTABLE LIVING IN AMERICA

As to the ordinary cost of living comfortably in the United States, measured in commodity prices, it is a matter of common observation that it is always higher than in Europe. It is likewise higher in some parts of Europe than in others, highest perhaps in Holland and in England, lower in Belgium, France, and the south of Europe generally. In all these countries it is easier to make economies, cheaper to get along if economies must be practised. But to live well, to be clean, comfortable, well housed, well washed, and well fed, the cost is not much less than in the United States.

The difference which actually exists is in part due to the higher wages in America. Working men are less numerous, less oppressed, better paid, a condition which in turn follows reluctantly the higher cost of living. Their scale of living is higher than in Europe and there is a far more wide-spread determination to better the conditions whatever they are. Prices are higher in a new region, an exploitable region, a region of large opportunities, a region in which men have not settled into classes, class-consciousness, and class hopelessness.

With all this, the American distinctly likes to be comfortable, to have good food well served, to live in new and clean houses, and to have attractive conditions when he travels and when he stays at home.

Again, as there are no hard and fast lines of caste in America, the number of those who rise from self-dependence to affluence or competence is far larger than in any other country. While we do not

take seriously our hereditary aristocracy, and while we look askance on the very rich as doubtful of their methods, we are likely to attribute incompetence or aimlessness to a man who in middle life cannot give a certain degree of comfort to himself and his family, with a bit left over for the future. All this is part of the explanation of the high cost of living in America, but no part of the reason why this cost was higher in 1911 than in 1897 or 1905.

WASTES OF A NEW COUNTRY

Other influences which make for a higher cost of living in America as compared with Europe are the waste of fire and the consequently additional cost of insurance, the lack of coördination in distribution of farm products and in other matters, the cinching coöperation of dealers and distributors, the lack of banking facilities in the great producing West and the resultant high interest on farm mortgages, and various other features peculiar to a new and sparsely settled country. With this goes the lack of postal savings banks and of the disposition to use them, the lack hitherto of a parcels post, lack of open markets and of many other contrivances which in Europe help a laborer's money to go farther than it does here.

The waste of the toleration of fraudulent corporations and of get-rich-quick schemes is also a visible factor to our disadvantage. The demand for statutes which prevent the sale of imaginary values ("blue-sky laws") is an evidence that the people are awakening to a realization of the cost of tolerating swindlers and swindling operations.

In the same connections, though with a different emphasis, we may mention the financial manipulations of those agencies commonly designated as "Wall Street."

The tariff for protection is not far away from these, and it is indirectly an agency not only in raising prices but in making them continuously higher. This is due to the shelter or leverage it offers to schemes for stifling competition.

The primal purpose of the protective tariff is to raise prices, in the interest of home producers. In some cases it fails to have that effect, as in the case of grain. In its grain supplies, Europe is dependent on America, the price being fixed in Liverpool, the great storehouse, or in London, the great clearing house, of the world, in accordance with the existing competition. The price at home is necessarily lower, in a degree proportionate to the cost of carriage to London.

In some cases, also, better methods of production, or the stress of overproduction, render the price of some articles at home lower than that ruling in London. But in the case of most goods which are or which may be imported, the price in America is enhanced by the amount of the duty. The suit of clothing which the writer is wearing as he writes cost him $35 in London with an additional duty of $21 in New York. In San Francisco it costs about $60. A certain piece of dress goods known to me cost $30 in London, the duty is $18, and the article is offered in a fashionable store at $80. Part of the cost is chargeable to the element of fashion, and fashion, like fortune, is a fickle jade. So a high increment of profit is necessary, for a left-over garment of to-day's fashion may have no value at all to-morrow.

In general terms, however, the protective tariff is the largest element in our American high prices, especially of clothing and of manufactured articles. No one can estimate how much it has operated to raise prices, for the details depend on the degree in which manufacturers and jobbers can use it as a leverage in forcing up the prices of their wares.

But this does not explain the rising cost of living. The American tariff has not been materially changed in these fifteen years. It is even occasionally "reduced downward," as Mr. Dooley sagely observes, "to the point where the poorest are within its reach." The reduction is so cleverly done that its pinch on the consumer has never been relaxed. Protection is a factor in the increased cost of living mainly in this way. The last fifteen years have enabled the beneficiaries of the tariff, through trusts and other similar agencies, to get steadily a firmer strangle-hold on the ultimate consumer: that is, the people generally. In this way

they have not only maintained high prices but made them still higher. To do the one is to have power to do the other. It is not my purpose to discuss the tariff question further than to insist that from every point of view of good government the special privileges involved in "protection" are violations of the American principle of "equality before the law," and opposed to the people's interests.

But we need not deny that tariff protection has diversified our industries, encouraged the use of natural advantages, and it may have even increased the aggregate of national wealth.

It does all this because its main function is to transfer money into the pockets of the man of enterprise. There are no other pockets from which to take it save those of the common man. To promote the wealth of the wealthy is a most commendable thing in national finance. It is in the hands of the rich that public wealth accumulates most rapidly. Wealth flows into their hands, even without the aid of privilege, but every special privilege helps. The fact that a man is poor shows that he is in fact not a proper custodian of funds. There is no doubt that a community is richer with one great corporation which bestrides the earth, and has kings and bankers, senates and churches, tributary to its power, than with a thousand business firms each striving simply to collect a living for the partners. The process of forming a perfect American Beauty Rose by pinching off all competing buds has been commended as a model of financial development. By the same processes we may develop a giant chrysanthemum, or a corporation of any sort which shall be hailed as "standard."

The fact is plain. Wealth grows most rapidly when its components are in the hands of those who know how to develop wealth. If the purpose of government is to increase national wealth by the quickest and surest way, the method of protection and subsidy is the surest. It does not increase individual wealth, for the struggling little men must pay for the dominant big ones, but the method is sure and it is receiving a brilliant trial in Germany. While we investigate, harass, and dissolve our great industrial monopolies, Germany renders every assistance that governmental alliance, protective tariffs, and systems of rebate render possible. Every help that technical schools for managers, for experts, and for workmen can give is also at their service. The value of this feature to every element in the industrial world cannot be over-estimated.

This phase of German administration is a model to the world, although in a democracy the theory and purpose of technical and industrial education must be different. In Germany the work of the individual is intensified and encouraged in order thereby to exalt the State. In America, the State belongs to the people and still exists for their benefit. In England, the two ideas still struggle for mastery without complete victory of either. The primary business of a democracy is justice, neither to make money for itself nor to help its citizens to make it, but to see that all have an equally fair chance to do so. In this sense "America means opportunity" and nothing more. Old age pensions, enforced insurance, and the like at the most make slight amends for lost opportunity.

But in the world at large, the world of dukes and barons, of generals and admirals, of kings of finance and lords of exploitation, the ideal of equality before the law does not yet obtain. Wealth calls for wealth; privilege for more privilege.

It is plain, however, that if any one grows rich in a community, the whole community is the richer for it. The lustre of his prosperity is in a fashion reflected from every face. This creates as it were an atmosphere of affluence, and where affluence is, all the other charms of life soon gather. There is nothing so fascinating as the movement of enterprise, and nothing accelerates it so much as governmental push, the transfer of the force of the many to the designs of the few.

One feature of all this is a heightened cost of living. As the elements of prosperity gradually strengthen their hold on the articles they handle or create, we find that Senator Burton is right in claim-

ing that this rise in cost is greatest in the progressive countries of the world.

When, in 1897, world prices began to rise, with them came the rise of trusts, industrial combinations, and enterprises extended and expanded by means of earnings based on false values — that is, on watered stock. These are not peculiar to the United States, but have been more or less dominant throughout the range of the "Great Powers" and of their colonial dependencies.

These are not altogether or even mainly an outgrowth of the protective tariff, although in almost every case and in every nation their influence has favored the extension of "protection" and from protection they have drawn increasing strength. This increase of monopoly, this accession of shelter and leverage toward the maintenance of prices, must be a factor in the rising cost of living. How great a factor this is, perhaps no one is prepared to say. Certainly prices would be lowered, and their continued rise afterward checked in some degree, if protection were withdrawn wherever it furnishes a check to competition. And every phase of protection of wealth-producing through taxation must be of this nature.

But rising cost is not confined to America alone nor to those countries which have most felt the beneficent influence of the protective tariff. The tariffs of England are laid for revenue only, and in that country as in the United States there has been a steady rise in price of all staple articles. The fact that the "Englishman's dollar" has fallen to 78 only, while the American's dollar stands at 70, may measure in part the effects of privilege in stifling competition. For world effects, we must look for world-wide causes. Free trade, fair trade, taxed trade and trade untaxed——these matters, while entering into the total of money stress and money abundance, are more or less local and temporary in their chief effects.

Preceding the year 1897, we had a financial panic especially severe in America, a period in which liquidation was imperative and money as a consequence scarce and dear. The prices of almost all articles and notably those of farm products were abnormally low, and the farmer with the rest of us was in debt and distress.

INCREASED AMOUNT OF GOLD

This same period of rising prices has been accompanied by a great increase in the output of gold mining. In the fifteen years following 1897, the amount of gold in the world has been increased by half, from about $7,500,000,000 to $11,000,000,000. The average annual increment is now more than $400,000,000, about $100,000,000 of this being consumed in the arts. And these sums are cumulative, the amount each year being added to the previous stock. It is natural to assume that, as the price of gold as measured in other products has steadily fallen as the stock of gold has risen, the one fact has been the cause of the other. It is not clear to what extent this is true, nor even that it is true at all, although most economists admit it as a partial explanation of the rising cost of living.

If the over-production of gold is advancing beyond the demand it is clear that its value must fall. But it is not evident that the demand is much affected, the one way or the other, by the increase in quantity of its measure of value. Gold is the nominal basis of credit, and the total gold reserve of the world is very small compared with the bonded debts of civilization (about $60,000,000,000) and the debt increases more rapidly than the reserve.

It is also uncertain what value, if any, we must give to another factor, that of waste in seeking for gold. Prodigious sums are each year wasted or transferred to undesirable hands through the exploitation of mines which do not pay, or through the operations of swindlers. If these sums be added to the cost of gold there is not much aggregate profit in gold mining.

It is not clear that great accessions to the gold stock in the past have materially or permanently raised prices. If this were an important element, it should not have been felt in 1897 nor in the years immediately following, but its force should be cumulative corresponding to the increase of the stock of gold. Apparently also the gold output of the future is likely

to become less rather than greater. While not denying the reality of the gold increase as a factor in raising prices, we may well question its leading position in raising cost as distinguished from prices and in effecting an abnormal distribution of the wealth it produces.

CHEAPENING OF GOLD PROCESSES

More important, it would seem, is the fact that under new processes of metallurgy gold can now be obtained at a cost lower than the cost fifteen years ago. The cyanide processes extract upward of 90 per cent. of the actual gold, while only about 60 per cent. was obtained by the cruder methods. The great mines of the Rand, it is said, with their output of about $1,750,000,000, could not have been worked by the old processes. The value of all gold must be affected by the cost of obtaining more. In so far as gold values are the result of cost of production, the better methods must tend to lower them. It is not clear, however, that the cost of production is the chief factor that regulates these values. What the value of the factor of the cyanide process may be in cheapening gold values, no one can say.

But it seems certain that in this regard the climax is already reached. Not many new gold mines have been opened under the stimulus of cheapened methods. The impetus to mining speculation is already spent, and while it lasted it was productive of waste rather than of wealth.

Most of the new gold has come from the working over of the abandoned dump heaps of earlier mining operations. The best mining engineers claim that the recent increase in gold production is "due to the discovery of a process, not to the discovery of mines. The enlarged supply comes from the old sources and the increment is constantly lessened as the old material is worked over with the resources of modern science. To be sure, there may be a discovery of either still another process of extraction or of unimagined mines, but one is as little likely as the other. Meanwhile, with the constant cheapening of gold, there is a constant tendency to lessen the frenzy of the attack upon the old stock of raw material of what may be called the manufactured article. For, in fact, the new processes are almost processes of manufacture. So many yards of material, so much cost for working, so much profit and ultimately an end."

In any event, whatever weight we may attach either to the increased output of gold, or to the increased cheapness of production, there can be no doubt that in both regards the world has reached a practical equilibrium.

INCREASE OF TAXATION

There remains but one other important world factor in the world-wide cost of living. This is found in the increase of taxes since 1897, and in the withdrawal, as supported by these taxes, of millions of men from productive labor.

This change followed the costly and calamitous Boer War, and was marked by the great increase in naval expenses, by the building of dreadnaughts costing $6,000,000 apiece or more, and of superdreadnaughts ranging upward to $15,000,000, with parallel increases of expenditures military and civil in all directions and almost everywhere. These expenditures were added to the rapidly growing interest charges on the bonded indebtedness of the world, the bulk of this being the debt for past wars, with a large and rapidly growing indebtedness for money borrowed for municipal and other commercial or industrial expansion. No matter who holds the bonds, interest must be paid, and to pay interest swells the burdens of taxation. A loaned dollar, which has the certainty of being more and more heavily taxed with each succeeding year, calls for an increased rate of interest proportional to its prospective loss in value when it is to be repaid. Any article must rise in price when its value is measured in terms of a progressively reduced because overtaxed dollar. This condition is partly recognized in Professor Irving Fisher's ingenious scheme of forming a stable dollar, by exacting a seigniorage (charges for coining) equivalent each year to the rise in the general average of prices above some recognized normal. Thus if

the present dollar is 30 per cent. below the normal, a charge of 47 cents could be made for the coinage of new dollars. This would tend to bring the old dollars up to the same level if the regulation was international. If a scale later than that of 1897 be desired the rate of seigniorage could be lower.

If, then, the scale of prices of articles in general has been raised in terms of gold by excessive taxation, the same taxation could be applied to gold with the effect of maintaining a relatively stable equilibrium. The price of gold would then rise or fall with that of other useful articles. International agreement might bring such a result, although the people might substitute bullion certificates for coinage, as they did in California during the Civil War. Whatever the value of this plan as a remedy for the unstable and falling dollar, it is based on a theory of causes not far from that herein set forth.

If our view is correct, the fall of gold is closely related to reckless financial administration of the leading nations of the world. Not one of these has any adequate check on extravagant appropriations on the part of its cabinets or legislative bodies. To spend money is a chief function of both these groups, whether in a monarchy or a democracy. Representative government is even more lavish than most kings could ever afford to be.

In the *Economiste Française*, M. Leroy Beaulieu has lately declared that "the world at the present moment is excessively badly governed. It has rarely been so badly governed. It is in the hands of incurable prodigals and improvident experimenters. Public credit can be maintained by a vigorously strict financial management, full of foresight," and that no nation at present seems to possess.

In 1911, the bonded debt of the nations amounted to about $37,000,000,000. These sums were virtually pawn checks, the cost of wars already fought. The annual interest charge on these was more than $1,400,000,000. The annual naval expenses of the seven "most progressive" — that is, most wasteful — nations rose from about $250,000,000 in 1897 to $629,000,000 in 1911. The total annual expense for army and navy of these nations rose from about $900,000,000 in 1897 to $1,742,000,000 in 1911. The number of men withdrawn from productive work rose correspondingly. Meanwhile, municipal indebtedness rose in like proportions, with its burden of taxes and of officialism. The bonded debt of the British cities was in 1897 about $1,500,000,000, in 1911 about $3,800,000,000. In France the bonded municipal debt was in 1906 about $800,000,000, in 1911 about $12,000,000,000. In Germany the municipal debt of most cities has doubled every ten years for a long time. The aggregate in 1906 was $1,825,000,000. It must now be at least $2,500,000,000. The municipal debts of the United States aggregate somewhat more. They stood in 1902 at $1,765,000,000. The total bonded debt of the world, war debt and municipal debt, is somewhat more than $60,000,000,000, or about half the estimated value of all the property in the United States, or about the same as the total wealth of Great Britain. The interest on this sum is not less than $2,500,000,000 per year. The cost of armies and navies with collateral expenses stands now at nearly the same figure. These sums are paid each year in one fashion or another. *They are paid by taxes*, and about half of the sum of all these taxes is exacted in addition to all the taxes paid by the people in 1897.

The severity of taxation varies, of course, with different regions, but the percentage collected on every dollar of working capital or income has its reflex effect on reducing the value of that dollar in the clearing house of the world. In the course of an argument to show that Germany is not suffering from tax-exhaustion, but has still the means to conduct "the next war," (the war against Great Britain), General Freidrich von Bernhardi thus discusses taxation in Germany:

"That the German people should have reached the limit of their tax paying ability is quite impossible. The taxes in Prussia have risen from 1893-4 to 1910-11 but 56 per cent. per head of population from $4.90 to $7.67, tax and tariff together. In the rest of Germany the per cent. of increase is doubtless similar."

For army and navy every individual

in Germany pays yearly $4. In France $5, in England $7.25. In this are counted direct expenditures only, exclusive of correlated expenses of interest, pensions, and the enforced idleness of thousands of men who might be engaged in productive industry. Meanwhile other thousands, unable to care for themselves through incompetence, drunkenness, vice, or congested crowding, are left at home to be likewise a burden on labor. To all this waste must be added the direct burdens of the two great wars of the last fifteen years, the Boer War and the war in Manchuria, their enormous waste going to swell the tax load of the world, for war anywhere is economic waste which spreads sickness throughout the economic system of civilization.

It is said that the total tax rate in New York is two and a quarter times as high as it was in 1897. The indirect taxation of protection which no one can measure has risen in still higher proportion. It then may be affirmed in round numbers that the tax expenses of the civilized world have doubled since 1897. The wealth of the world has risen, but not in the same proportion, and much of the apparent increase in wealth is due to this very fact, of the fall in the value of the measuring standard of gold, due in large part at least to excessive taxation. And the tendency of all these operations of debt, borrowing, tariff protection, and the like is to swell the wealth of the banker and the lord at the expense of the common folk. Many little streams of privilege join to swell a great river.

All the nations of the earth are devising new methods of taxation: income tax, inheritance tax, syndicate concessions, government monopolies — liquor, tobacco, salt, camphor, railroads — without giving up the old forms of exaction.

The population of the United States in 1911 was 93,722,509 persons. The tax burden of city, state, and nation amounts to $38.50 per capita, "establishing a record of public expenditure which no other nation on the globe approaches or presumably is anxious to emulate."

All taxes, however levied, constitute a confiscation of private property for public purposes of greater or less importance to the individual. A large and varying percentage represents avoidable and therefore harmful waste. All these burdens fall finally on those groups which have least power of resistance. All of them tend to reduce the future value of the monetary unit. As most of these imposts are made through indirect tariff exactions, proportioned not to wealth or income but only to consumption, they fall far more heavily on the farmer and the laborer than on the men of wealth. The wealthiest American, as Mr. Fels observes, "can eat only one meal at a time and only three or four meals a day." A poor man does not eat as much as a rich man, but the difference is less than the difference between their property holdings.

The increase of taxation falls on the middle man as well as on the others. He has, however, a certain power of self-protection by putting up his prices. If he can maintain them singly or in co-operation through monopolies or trusts, the producer or the consumer must suffer. In any event the ultimate incidence of increased taxation must fall on those social units which have least ability to strike back. As matters are, these groups are the working men, the men on fixed salaries, and those dependent on annuities. As the purchasing power of a dollar will be less in ten years, the rate of interest tends to rise. It tends to fall with the settled civilization of a country with the relative decline in opportunities for special enterprise or successful exploitation.

Since 1897 the tendency of interest rates has been upward. At the same time bonded debts bearing a low rate of interest have steadily fallen in value. It is recorded that the British Consols, once "the premier investment" of the world, at 2¾ per cent. stood at 113 in 1897. They are now quoted at 73½. Calculated on a 3 per cent. basis, their real value in 1897 would have been $123.28, their actual value at present $93.90. Similar depreciation has taken place in the values of the bonded securities of France and Germany, and in general in all "gilt edged" low interest bonds. This has turned public attention to the local mort-

gage which bears a higher rate of interest. People have been led into a reckless preference for securities with uncertain basis over the smaller but certain earnings of the low-priced bonds. But all recent national borrowings have been made at a higher rate. The Government of Prussia, for example, has paid 5.20 per cent. in New York on short period loans.

To sum up: In the judgment of the present writer the primary factor in the rise of the cost of living the world over is the fall in the value of gold due to excessive and growing financial exactions. In other words, it is produced by the steadily growing encroachment of government on the individual through the Indirect Tax and the Deferred Payment, the two agencies of tyranny in the past, now used for the self-oppression of democracy.

The function of government and government officials is to spend and not to save, and each government has the mediæval obsession of spending for show and for defense against imaginary dangers rather than for matters which directly concern and directly help the people.

To state the problem in another form: The common man has too many mouths to feed beside his own and those of his family. The long roll of those fed by tax increments is steadily growing as grow the taxes which support them.

It is estimated that one man in sixteen in France is a government official and one man in sixteen in New Zealand also. The percentage is not very much lower in England and Germany. The general fact that such officials are often chosen through favoritism or for political reasons rather than for merit increases the burden on those who have no part in the choosing. One cause of the spread of the social democracy in Europe is found in the exclusion in some countries of its adherents from the public service. To shut out of the public service any type of men on account of political ideas makes for inefficiency, corruption, and discontent. To add to these burdens we have in all lands the hundreds of predatory rich and the thousands of desultory poor, equally a burden and a growing burden on Society because their earnings are less than the cost of their yearly keep. A steadily increasing number of men are economically idle through employment in the extension of war armament. As the navies fade away after twelve or fifteen years of idleness, the effort expended on them is economic loss.

It is said on good authority that one man in every six in England is in some way personally or financially interested in the extension of the army or navy. All these are so many more mouths to be fed by the common man of the nations. If the tax payer had only his own to feed, the law of supply and demand would soon abate the rise in cost of living.

The wealth of the world increases amazingly through scientific invention, through commerce, and through the betterment of social relations. Its nominal wealth is also rapidly increased through the fall in the value of its standard of measure. Still more rapidly rises the cost of administration, and the greatest of the items of expense are in lines which are wholly unproductive either of wealth or of well being to those who pay the taxes. At the best these expenses constitute a vague insurance against evils which may never come, and which they help to create.

If these views are at all correct, and they are presented tentatively and in a spirit of modesty, we find in this rising cost a dangerous portent in world economics. It is the sign of a condition that must be worse before it can grow better, for there is no visible sign that any nation, whether monarchy or republic, is likely to reduce its army of non-producers, to pay its debts, or to abate its taxes. The enforced assessments of the governments are causing a great and growing unrest among the people. There would be a far deeper unrest if posterity could be heard from, for it can only save itself from final bankruptcy by new inventions and new exploitations or by a frugality of administration of which no nation gives an example to-day.

When we consider how persistently the ultimate citizen is imposed upon, under the guise of patriotism and protection, we can appreciate the remark of Bernard Shaw that "Man is the only animal that esteems himself great in proportion to the number and voracity of his parasites."

THE TALKING TICKER

A NEW INVENTION — THE MAGNAPHONE, TELEPHONE AND GRAPHOPHONE COMBINED

THERE is a talking ticker now, a machine that will entertain and instruct you for twelve hours on a stretch with the gist of the day's political speeches, baseball scores, election returns, and any other news that seems important. It will tell you all this in your own home as soon as you could find it out if you stood in front of the newspaper bulletin boards, and when there is no vital news to tell, it will entertain you with ragtime or grand opera. When you go to the station the same machine will tell you when your train leaves or what track your friend's train is coming in on. When you go abroad it will help your feeling of security on shipboard; for it enables the captain to give simultaneous orders to all the crew no matter where they are. All these things are true if you happen to live in the right apartment house in Wilmington, Philadelphia, Baltimore, or New York, if you go to the right station, and if you go to sea on the right ship, for the Magnaphone that does all these things is new.

The City of New York has granted a franchise to the magnaphone company, permitting it to furnish, by means of an entirely independent telephone system, not only sermons and music but all manner of news. Already the installation has been made in sixty-four apartment houses in the upper part of New York City, and extensions are rapidly going on. Every six minutes from noon until midnight these sixty-four apartment houses hear a new musical number, the latest baseball scores, election returns, or other items of important news.

By means of the magnaphone instrument itself, which is the chief mechanical novelty of the service, the sounds carried over the wires are so magnified that it is not necessary to hold a telephone receiver to the ear. The sounds carry distinctly to all parts of the room.

A simple use of the magnaphone has been made in the Grand Central Station in New York City. A number of receiving horns have been placed in all parts of the building, with a single transmitter in a telephone booth. The train announcer steps into the booth and calls the arrivals or departures of trains, giving the schedules through the transmitter in little more than an ordinary tone of voice. Each tiny magnaphone instrument at the end of the line enlarges his words and casts them out over the building.

The magnaphone news and music service, however, is a more impressive use of the invention. The present central office can take care of 1,000 subscribers.

The cables, that now terminate at one end of sixty-four receivers, terminate at the other end in several transmitters, from any one of which sounds can be sent to all the receivers at the same instant. One transmitter is used in making the news announcements. A man of distinct enunciation is selected to make them but he never speaks in more than an ordinary tone. Other transmitters are connected with graphophone musical records.

A different kind of transmitter, which is a separate invention, comes into play here. The instrument is not a great deal larger than the sound box of a phonograph and it moves over the revolving graphophone record, in the same way, receiving vibrations from the needle that reports the inequalities in the disk.

In this case, however, the vibrations of the needle are not directly recorded by sound vibrations. They are transformed first into electric waves in the transmitter and sent thus over the wires. Not till they reach the other end of the line are they transformed into sound waves. No

musical sound is heard where the record revolves, but it is heard in many homes of the subscribers. Not only has the voice of the singer or the tone of the musical instrument been preserved for a long period of time on a graphophone record, but when it is again reproduced it is heard miles from the reproducing instrument. In this long distance transmission there is also an improvement in the quality of the music. The hearer is not annoyed by the mechanical sounds of the grinding motor. The only sound transmitted is that generated as the needle point passes over the disk. To the listener, too, there is a gain from the fact that he is not compelled to manipulate records or the mechanical contrivance of the graphophone. He does not of necessity even see the sound-producing instrument. A small horn, which may be concealed in a corner of the library or bent into the centre of a bouquet, pours out melody at all times of the day without his having to touch it, unless he wishes to shut it off.

The line being on a separate circuit from the regular telephone, the subscriber can keep the instrument busy all day long, if he chooses. He can even regulate the volume of the sound by cutting in more or less resistance to the magnaphone instrument. A resistance box with coils offering either 200, 300, or 500 ohms in resistance, gives four different volumes, and the sound may be still further dimmed by removing the horn from the receiver.

At the central station the operators have had their own problems of volume to settle; but they conquered all the difficulties as they arose. Each graphophone transmitter carries current sufficient to furnish 100 wires with full volume of sound. This current is very strong, however, and the transmitter is kept cool by means of a water jacket with a constant flow of cold water — just as a steam engine is water-jacketed. When more than 100 wires are receiving the music service, another transmitter is harnessed into service — an extra transmitter for each 100 additional receivers. These move over the records in absolute synchronization, because all the disks on the transmitting table are revolved by one electric motor, and are controlled by a single switch. The number of wires leading to the central station do not determine the number of transmitters to be brought into service. Only the number of instruments actually connected count, and ingenious methods of telling about how many subscribers are using the service at a given time have been devised.

At the present time the subscribers to this magnaphone service are all taking everything that comes over the line to them. They appear to be as happy with it as is the proverbial small boy with his first pair of copper-toed boots. Nor is it exactly a toy. The news service is accurate and speedy. At least once every hour the bulletins are read over the line. From every available source the news comes into the central distributing station. In fact, a news gathering service is being built up which in time promises to equal that of any one of the great newspapers. Magnaphone subscribers receive their bulletins almost as soon as the news is flashed to the daily papers, so they are not compelled to wait until the next morning for their information. In the transmission of the news of great events, catastrophes, baseball games, and election returns, this immediate service is of recognized importance.

At the season of the year when baseball results are most eagerly sought, even though Wagner's "Siegfried" may be scheduled for 3.42 P. M. on the programme, it has to be elbowed off the list by the announcement to the expectant subscribers that Hans Wagner has made a home run. The baseball reports are eagerly followed and the boys in whose homes the magnaphone has been installed are the heroes of the day in their juvenile neighborhood.

The news and music service is already getting on a commercial basis, and other uses of the magnaphone are being continually discovered. The inventor, Mr. George R. Webb, has given up all other work in his efforts to develop the service to its fullest. When he first brought the magnaphone into existence he was tied up with many business interests. He was president of the United Railways of Baltimore, of the Electric Light Company, and

of the Telephone Company in the same city, and he had been president of the Wilmington, Pittsburg and Allegheny Telephone Company and of the Duquesne Light Company. The magnaphone was at first simply his plaything, but as its possibilities opened up to him he gradually dropped his other interests to give his exclusive attention to his invention. Fortunately relieved of the anxiety about financing it, he has been able to go rapidly ahead. His distaste for premature publicity caused him to make no announcement of his progress until his dream had actually been realized.

DIVERSE USES OF THE MAGNAPHONE

Mr. Webb has achieved a method of synchronizing his magnaphone service with the operation of the motion picture machine, so that the picture and the dialogue can be given simultaneously. This is the achievement toward which Mr. Thomas A. Edison has been bending his energies for so long a time, and if Mr. Webb's method proves universally practicable he will have revolutionized the motion picture business. He is now in France demonstrating his method.

Other extensions of the usefulness of the magnaphone have already been made. The magnaphone has been put on a dredge and it operates so that the foreman standing on the surface of the ground may know, by means of the noises brought up from below, just what kind of material the shovel is working through.

It has been attached to a diving apparatus so that the man at work beneath the water may keep those above him posted as to the exact conditions surrounding him. It has been made use of by a lecturer so that, while speaking from the platform, his voice has been relayed, so to speak, and repeated from various angles of the auditorium. The results are perfect. There is nothing like an echo to confuse the ears of the audience. For that matter, his speech may be repeated almost indefinitely and listened to by hundreds of thousands.

It has been suggested that the magnaphone be placed in all subway and elevated cars in New York City, so that the stations, as they are approached, may be announced in a manner understandable to the passengers. In the meantime, one of the transcontinental railroad companies has arranged to equip all cars on its through service with magnaphones. As soon as that is done those in the last coach will share with those in the first, as well as with those in the intermediate coaches, the knowledge that "dinner is now ready in the dining car." On one of the Hudson River steamboats magnaphones are now in use. One announcer dilates on the beauties of the scenery and all on board are properly informed.

The Navy Department has had the Battleship *Utah* equipped with magnaphones. This has been done not only for the purpose of furnishing entertainment to the crew but also to facilitate giving orders. In time of battle or in time of practice manœuvres, this use of the magnaphone will be of the utmost importance. Orders may be given by the commanding officer and repeated throughout the entire ship, if so desired. The *Kaiserin Augusta Victoria* is also equipped with it.

An ocean liner equipped with magnaphones would make the dangers of the deep much less to be feared than they are at the present time, and the convenience of ocean travelers on ordinary occasions would be served. In the time of dangers, the captain from the bridge could sound warning in every stateroom, and, in fact, throughout the ship, and this could be followed by commands to the crew. By a reversal of the ordinary use of the magnaphone aboard ship, it would be possible for the captain, or the officer in command, while on the bridge, to know exactly what was going on even in the most distant part of the ship.

The New York *Times* tells of other uses:

> The Kings Park State Hospital is fully equipped with magnaphone instruments. It has long since been found that any effort to entertain its inmates in a common meeting hall was almost valueless because of their restlessness, inharmony of spirit, and germane causes. But Dr. Macey has found that a magnaphone horn placed in a ward, or a single room, not only provides the best kind of diversion for his patients, but is in many cases

of actual curative potency. The surprise of hearing an unexpected melody issuing from an innocent looking little horn has brought any number of patients out of an uncontrolled hysteria.

It is operated under the direction of the hospital authorities, and is by them turned into any room where its help is needed.

In public parks and amusement places it has already superseded the occasional orchestra. There are several places on Coney Island where its services are being gratefully acknowledged by a nightly throng of music-starved souls whose purse strings will not stretch to admittances to music halls. It is installed in Asbury Park, and will presently be placed in some of the smaller coast resorts which do not rise to the dignity of a public orchestra.

The company controlling the magnaphone is beginning to lease its hundred-unit equipments. The first shipment has gone to an enterprising apartment house owner in Philadelphia. This owner, finding business dull, has arranged to install a magnaphone in every apartment, and has advertised as included in the rent, "light, heat, water, telephone, news and music service, all free." As a result, his apartment house at the present time is without a single vacancy.

THE WORLD RACE FOR THE RICH SOUTH AMERICAN TRADE

A COMPETITION FOR COMMERCIAL SUPREMACY IN WHICH THE UNITED STATES IS PITTED AGAINST GERMANY, GREAT BRITAIN AND ITALY, AND IN WHICH WE ARE HANDICAPPED BY LACK OF BANKING FACILITIES, BY MEAGRE SOURCES OF CORRECT NEWS, BY INADEQUATE KNOWLEDGE OF CONDITIONS, AND BY MISDIRECTED TRAINING OF OUR TRADE REPRESENTATIVES—THE NEED OF YOUNG MEN TO GET THE BUSINESS FOR US—A SURVEY OF THE EFFECTS OF THE PANAMA CANAL UPON SOUTH AMERICA AND A STATEMENT OF OUR UNPREPAREDNESS FOR A GOLDEN OPPORTUNITY

BY

CHARLES LYON CHANDLER

(OF THE AMERICAN CONSULAR SERVICE)

THERE are many barriers against American trade expansion in South America and many handicaps which American investors to-day have to overcome. But perhaps the most important are these: We need, in South America, American banks, American young men, a better informed press, and our investors there need better labor — that is, cheap, dependable labor.

There is not an American bank south of Panama. Here are two examples of what this means to American business:

Shortly after I had taken up my residence in Buenos Aires I went with a friend, a representative of one of the United States Government executive departments, to the cashier's window of a foreign bank in South America, to have a Treasury draft cashed. The draft was literally thrown back in my friend's face. It took him three days to secure the money on that draft. Think of it! Uncle Sam's check so strange a thing in South America that a bank would not take it!

But that is simply the picturesque side:

I knew a young American, Herbert Leonard, who had come to Callao, while I was connected with the Consulate, to represent an American tin roofing manufacturer. There was a wealthy rancher at Callao, Elogio Castro, who owned a ranch about the size of the state of Dela-

ware. The order for the tin roofing for all the sheds and shacks on that ranch was a choice morsel, and Leonard spent many days cultivating the acquaintance of the wealthy Don.

Finally, in the midst of a two hours' conversation one day, the rancher let fall a dozen words which made Leonard certain that he had not spent his time in vain and that the order was his. To make a tedious Spanish sale short in words, Leonard quoted prices for the roofing and waited for Don Elogio to send in his order. After several days of delay there came, not the order, but a courteous note, stating that Señor Castro regretted that he could not place his order with the Señor Leonard, as he most assuredly desired to do, because the Señor Leonard had quoted him prices considerably higher than those which he had quoted to several other purchasers in Callao and Lima. Señor Castro ended his letter with a list of the names of those other purchasers.

Of course, Leonard sold his goods, as do all salesmen, on a sliding scale of prices. His quotations necessarily varied according to the size of the order and the grade of material. To dealers he quoted discounts. Then, too, he had a certain margin to meet competition. His price to Don Elogio was fair if viewed in this light, but the Don cared nothing for the reasons why Leonard should charge him one price and some other buyer another.

Leonard dropped in at the Consulate that afternoon and showed me the letter. "It gets me," he said. "I know that he might have got one of my customers to tell him my price, or, maybe, two of them. But how he got the whole list is more than I can figure out."

He and I studied the matter for weeks: finally we located the leak. The bank that Leonard dealt with copied every invoice, every scrap of paper, that related to his business. Don Elogio and half the other prominent men in the town were directors of the bank; consequently, all of Leonard's invoices were at their disposal and his business became public property. Moreover, there was no way for him to escape the trap, much less to retaliate. The whole banking business of the city — and the same would have been true of any South American city — was absolutely controlled by interests opposed to his own. He must either place himself in the hands of his purchasers or else in the hands of his trade rivals, for those banks that were not controlled by South Americans were in the hands of citizens of European countries competing directly with Americans.

Why, then, you may ask, have we no banks in South America? Mr. Samuel McRoberts, vice-president of the National City Bank, of New York, says that all that is needed to cause American bankers to establish branches in foreign lands is for Congress to amend the law to permit American national banks to operate them. Recently, the National City Company sent Mr. William Morgan Shuster, formerly Treasurer-General of Persia, and two associates, to South America, to study the South American field with a view to the betterment of American banking connections there. Since the National City Company operates in a wider field than a national bank, it may find a way to overcome the handicap placed against American bankers in foreign countries by our antiquated banking laws. But there will still be the imperative need for an amendment of our banking laws by Congress, so that all our banks may be free to enter this new field.

It is currently reported in South America that one chain of banking organizations sends copies of every invoice in its hands — and a good many of these invoices are from American customers — to the head office of the bank in one of the European capitals, for the information generally of exporters in that country. That country is one of America's largest competitors in the world's market. Surely, any American exporter can realize what an advantage it would be to him if he knew every price quoted by every French, English, German, and Italian firm to every South American buyer. This practice can hardly be condemned if we Yankees refuse to do our own banking.

Another phase of the situation is this: The more heavily we finance our foreign commerce with our own capital the sooner

we become a creditor nation. The development of new countries is dependent upon creditor nations to finance their growth — to build railroads, canals, and wagon roads, to found factories and other industrial institutions, and, above all, to take up the issues of national and local bonds. There is no part of the world of which it would be more advantageous for us to become a creditor nation than Latin-America. If we do this we will be an integral part of the growth of those countries, and, controlling the financial supplies furnished, we will secure a prior lien, as it were, on its future prosperity and on its business generally. This is the chief argument in favor of that promotion of big business in South America which the State Department has recently taken up under the "Dollar Diplomacy."

The big business, the loans we are floating, and the railroads we are building in South America to-day are substantial boulders which will hold open, against the attacks of our trade rivals, the door of commercial opportunity in South America for the small exporter. But England, France, Germany, and even Holland, have so far anticipated us in this respect as to make it problematical to many, at first sight, whether an American banking institution there would stand the strain of competition with those which have been for fifty years established in the field. This doubt, however, is quickly dissipated when the volume of our commerce in South America is considered. We have the commerce, and that is the essential warrant for the existence of a bank. In one decade, from 1901 to 1911, our exports to South America increased 288 per cent. In that period the total trade of South America increased somewhat more than 150 per cent. To-day the Argentine Republic stands ninth among our customers: in 1900 she was fourteenth. Brazil stands thirteenth: ten years ago she was sixteenth.

The bulk of our investments in South America also indicates the possible success of an American bank in this field. We have thirty million dollars in mines and other properties in Peru; twenty million dollars in packing plants in Argentina; fifteen million dollars in packing plants and railroads in Uruguay: to say nothing of our capital in Colombia's banana plantations and mines and in Venezuela's asphalt fields. Ecuador's railroads are under American control. A Harvard graduate manages the electric and power plant of Rio Janeiro.

The banks of other countries in South America show large earnings. The London and River Plate Bank not long ago paid a dividend of 20 per cent., and the London and Brazilian Bank a dividend of 17 per cent. The British Bank of South America and the Anglo-South American Bank paid 15 and 10 per cent., respectively, and the "melons" of the banks of other nationalities were just about as good.

Again, good banks are needed for national "team-play" in trade expansion. Bankers are the men on the coaching lines in foreign business; the directors of German, French, and English banks have their fingers in many enterprises — in home companies exporting railroad ties or agricultural machinery, in railroad loans, and in sewerage and other business operations. How can our people back home keep in touch with these opportunities for investment and for business unless they have such men on the spot to advise them?

There is one point, a bit aside from banking, that deserves mention here. Nothing is harder for the average exporter to ascertain than the standing, or credit rating, of firms in foreign countries unless he have the assistance of a good mercantile agency. The lack of such agencies has handicapped American exporters in many South American countries very seriously, and until they are established, American bankers in South America could be very useful by supplying the information they usually give.

An American bank would be welcomed in those countries. Just before I left Buenos Aires for the United States the last time, Dr. Jose Maria Rosa, the Argentine Minister of the Treasury, told me that he could hardly understand why we had no bank in Buenos Aires, a city as large as Philadelphia. "The Argen-

tine Government will give all possible assistance toward its establishment," continued Dr. Rosa. "How can your trade with us ever grow, unless you have a bank here, Señor Chandler? It is so very important. Tell your countrymen to come here and found one."

Dr. Eliodoro Lobos, the Minister of Agriculture, was even more emphatic. He said: "Your President and Secretary of State will make their names immortal if they will only get such a bank started. We need such a bank as well as you. Otherwise, our trade with you cannot grow, and nations are better friends if they see more of each other and have more dealings with each other. Your packing people are moving here to the Argentine, and they will require one more than ever."

That last point of Señor Lobos's is worth remembering. The meat producing centre of the world is rapidly shifting to the River Plate. Of all the beef consumed in London, 78 per cent. is shipped from the Argentine. If our supplies of live stock in the United States continue to diminish 9 per cent. every ten years, while our consumers increase 21 per cent., as our census statistics inform us, we shall have to turn elsewhere for our meat, and that "somewhere" will almost certainly be either the Argentine or Uruguay. Are we going to let all money transactions in our food supplies be controlled by our trade rivals?

American shoe manufacturers are now buying a large percentage of their hides from South America. They are competitors in the world's market against the shoe manufacturers of England, Germany, and France. Isn't it rather a serious thing that for lack of amendment of a single law this country should give into the hands of English, French, and German shoe manufacturers the knowledge of prices paid by their American competitors for their raw material? We are dependent upon South America for more things than we realize, perhaps. How many know that we depend upon the nitrate beds of Chile for all our powder, dynamite, and a great many other valuable commodities in the manufacture of which nitrate is used? We are dependent upon South America for coffee and cocoa. The finest kid skins for ladies' gloves come from that corner of Brazil which juts out into the Atlantic Ocean.

We do not realize the price we pay foreign bankers on this immense trade between the two continents. It has been roughly estimated that the British banks alone have made more than eighty million dollars from citizens of the United States in South America, and some authorities will tell you that this is too low an estimate. The toll is constant. It is like the old French seignorial river dues, that never ceased because the river never stopped flowing.

These foreign banks, in those lands for more than fifty years, slowly but ever so surely have reared a great fabric with branches in all the big trade centres. They now present an organization as closely knit as any army or navy, all aiding in the advancement of the interests of their home countries, from the presidents and boards of directors — most of whom are generally interested in railroads and other lucrative South American enterprises — down to the newest "clark," fresh from London. We, also, need such a machine as this for our trade.

THE NEED OF YOUNG AMERICANS

For us the South American commercial field is essentially a young man's field.

The general retail trade — the selling of general lines of hardware, of paint, and of miscellaneous dry goods manufactures to the retailers of those countries — has received little development. That is the business which is to come, and I consider it more important in building sound commercial relations with other countries than the big business. Of course, the big business makes it easier for our exporters to get the little orders of the retail merchants. But many other countries, notably Germany, have already made great progress in clinching the South American retail trade. When we go in for that business we shall have to fight for it and it is only the young men of our country who can secure it for us.

Why? Because little orders are placed with friends. For the drummer selling

to Jeremiah Smith, of Kalamazoo, it is worth a good many orders to gain the good graces of Mrs. Smith and it is a strong point for that drummer to be on such terms of easy familiarity that he can ask if Jeremiah, Jr., has recovered from the measles. This is just as valuable with Señor Alvarez, of Montevideo. Indeed, it is much more valuable. You know that in our own country the element of personal relations in business getting is much stronger in the South than in the North, and if you multiply this difference many times you will have a very good idea of the importance of personal relations in business fields in South America.

One of the hardest things for an American salesman, newly come to a South American state, to understand is why he must spend so many precious days simply attempting to gain a social entree to the Dons as a preface to the privilege of placing a business proposition before them. The only reason is that it is the Latin's way, and, if his business is to be gotten, the American salesman must first learn and appreciate his customs.

Only the young man can do this. He has the adaptability and the years to spend at the task. He expects to spend a long time preparing himself. Germans in the foreign trade are trained from — well, I often wonder how many years a German *will* spend just to saturate himself with a knowledge of the country where he is to be his firm's business getter. A German does not leave his country for a business tour to drum up business. He comes to live in the South American country, and when you find him finally established he has become about the nearest facsimile of a South American incidentally engaged in representing a German house that you can imagine. And this is why the Germans are getting the general trade of these countries.

I remember one day when, as I sat in the office of the Consulate at Montevideo, a type of the older, seasoned American salesman entered. He practically admitted to me later that the only reason he had come to the Consulate at all was that someone had told him that it was the right way to begin and that the only thing he had in mind to ask me for was a list of customers, with their ratings, so that he could get out that afternoon and hustle for business. He had one of the best lines of hardware, he told me, ever sold out of Chicago. For ten years he had represented his company in various places through the Northwest, and he had recently come from Michigan, where he had made such a success that, when the directors of his firm decided to branch out into foreign lands, they had chosen him as the logical man to get the business.

He knew his line. If I had just then been in the market for an automobile I believe he could have convinced me that it was one of his magnetic tack hammers I really wanted. I asked him if he was as steady on his feet with Spanish as he was with English. He said he had been at it for six months before he left "the States" and that, although he did not profess to be able to colloquialize in the lingo, he guessed he could brush along in it well enough to sell his goods. I fired a fair amount of Spanish vocabulary at him. It submerged him completely. I suggested that perhaps he would find it difficult to sell his goods to merchants who would counter to his arguments with an even more formidable shower of Spanish than that to which I had treated him. For about fifteen minutes we argued the point. I suggested also that he familiarize himself with the way of doing business in Montevideo, with the banking facilities, and with the Spanish idea of credit. Although I do not clearly remember all the details of our talk I distinctly recollect his closing remark.

"Well," he said, squaring himself, "I sold this line in Kalamazoo: I guess I can sell it in Montevideo."

Having written that line out, it appears to me almost too absurd a speech for a man of his experience to have made, yet I have heard others express about the same idea. To do this particular salesman justice, he proved a sticker. He gave up in the long run, but he clung to his forlorn task longer than I had ever supposed he would. I accompanied him on his first few tours. It was pitiable to see him grope for the few familiar words

in the sonorous Spanish of the merchants and to try to catch just enough to get the sense of their conversation. Even more lamentable were his vain efforts to phrase some incontrovertible argument about the value of his wares in his one-syllable Spanish. As much as I could I acted as translator for him. A Spanish merchant would raise a question. The drummer would instantly take from his resourceful mind some smashing argument which he had used a thousand times at home — prepared to obliterate every objection of the doubting Don — and then he would wind up with a two-line statement that was lame, halt, and blind and that must have sounded to the Don like an extract from a primer. When he was asked to give six months' or more credit he seemed to think that I had purposely guided him to every dead beat in Montevideo.

One of the first questions he put to me was, "How could he start an advertising campaign?" I suggested a couple of the best weeklies — a curious combination they are of our own *Saturday Evening Post*, *Life*, and *Police Gazette*. No. What he wanted to do was to circularize his trade individually. That practice was then new in Montevideo. I happened to remember a printer who, on opening his establishment, had sent out a circular to his friends; so I secured a copy of the circular to show the American salesman how circularizing was done in Montevideo. For he had, even in that short time, come to see that he would have to follow custom to get business.

After laboriously reading the circular he remarked to me that he could not tell from it whether the printer had invited his prospective customer to visit him for a month or was proposing for his daughter's hand. Well, that is the way they do such things in Montevideo. One sends out a business circular. In itself that is an innovation, but Heaven forbid that one should rudely quote prices in that circular. One simply calls to the attention of the highly esteemed Señor Gomez the exquisite pleasure which it would afford the proprietor of the printing establishment if he, the highly esteemed Señor, would, when having under consideration such work of that character as his great and wonderful business must constantly demand, only bear in mind the fact that there was in Montevideo such a printing establishment, which, although it was not quite good enough to do such work as was due the illustrious Señor, had nevertheless a proprietor who would consider it the highest honor of his life to be given the slightest intimation that he was worthy to be thought of in connection with the esteemed Señor Gomez's orders.

The Yankee salesman declared that, if he had to begin with that soft pedal and work his way up with a series of circulars until he had gotten sufficiently into the merchant's graces to be granted the privilege of putting a business proposition before him, he guessed the business wasn't worth the time of any man over eighteen years of age.

After this salesman had returned to the United States, his firm, probably at his advice, sent to Montevideo a bright young man who had had only about two years of sales experience but who had on the other hand a very sound, if somewhat stilted, command of Spanish to back him and who was willing to bide his time, as, indeed, at his age he could afford to do. When I left Montevideo this young man had worked up at least enough business to justify his existence and had acquired a circle of friends and a familiarity with the ways of the people which I knew would in the long run bring him business beyond his dreams. Perhaps you will think this is an exaggerated case, but it is not.

THE NEED FOR BETTER NEWS SERVICE

Another of the greatest handicaps against the American in South America is, I think, the lack of good news service between the two continents and of sound knowledge of South American history and economic conditions. A great quantity of distorted and injurious "news" is circulated about us in South America, and, as a consequence, a prejudice against us is created which is perhaps our greatest handicap in making friends. I read some time ago that Secretary Knox in a speech quoted an article from some South American journal, printed as a despatch

from Washington, stating that the American Government was this year showing a deficit in governmental expenditures for the first time since the Civil War and that as a measure of economy it was intended to abolish the office of Vice-president and to reform our national lottery. I have frequently read statements in South American papers that described our international policy in language even more absurd than this.

This need of better knowledge, of correct daily news, is as great with us as with South America. By reading any one of our metropolitan dailies we can follow the course of the Home Rule Bill through the British Parliament. Yet what have our papers said of the sweeping electoral reforms which the Argentine Government has recently adopted? Perhaps it is fortunate that we have had so little to read, for what I have seen printed in American papers is mostly untrue, and so, when the exchange of news is bettered, we shall not have so much that is wrong to unlearn. And how many Americans speak Portuguese? How many know that as much Portuguese as Spanish is spoken in South America? How many know that the label on the can of tooth powder shipped to Pernambuco must be printed in Portuguese and on that shipped to Bocas del Toro or Bahia Blanca must be in Spanish? No, we are still asking the man from Buenos Aires if he has any hotels in his city. We wish to know if the Argentine has any roads that an automobile can run over, though I had an office in the same building in Buenos Aires with an Italian automobile salesman who sold two or three $5,000 motor cars every month.

Our schools should pay more attention to this need, and, above all, our colleges and universities should not merely lay much more emphasis on teaching Spanish and Portuguese but should insist that instruction be given in at least the rudiments of South American history and economic conditions. For a nation of ninety-four millions of people we are absurdly inadequate in our training of young men for as useful and old a profession as exists — international trade. Our whole system of modern language instruction needs revision, with teachers who can teach the Spanish of Madrid rather than the Spanish of East Boston. How many institutions are there such as the Boston High School of Commerce and the Philadelphia Commercial Museum? At how many colleges can one learn a word of Portuguese? We have more than $150,000,000 worth of trade with Portuguese speaking countries. Do you think that one high school boy in a thousand can tell you that Buenos Aires is larger than Philadelphia or that the highest railroad in the world is in Peru?

There is nothing more humiliating for an American than to visit one of the large South American universities and find the eager young men there studying Kent and Story in law, James in philosophy, Trent in American literature; or to hear the correct answers given to such questions as: "How long was the term of the President of the Confederacy?" or "Who was Edward Everett?" and to imagine the answers the students in our universities might give to similar questions about Rivadavia or Unánue or Garcia Moreno.

When the ships of the Atlantic and Pacific brim Culebra Cut there will set in a tide, such as once flowed in our own country from East to West, that will call out from our universities, from offices, and from shops the youth that has most ambition, most daring, most resourcefulness, and most adaptability. Colonel Goethals tells us that he is going to put the first ships through the Canal next August; so it does not seem too soon to get ready for the change to-day. Certainly, none of the great exporting nations of Europe are letting the grass grow under their feet, and we cannot afford to let this South American business escape for lack of preparation of our young men.

SOUTH AMERICA'S NEED OF IMMIGRATION

The Panama Canal is viewed by Americans almost wholly as a channel of commerce for wares. But vessels carry more than wares. In their steerage are future nations. The Panama Canal is certain to prove one of the greatest channels of immigration in the world. It is just here

that so many people make a mistake in prognosticating the influences of this Canal. They compare it at once with the Suez Canal; they modify the effect of that waterway to suit the commercial conditions prevailing in North and South America and present to you a complete table of alterations in the world's trade which the Canal is to bring us. But any comparison between the Suez and the Panama Canals is impossible, because the Suez Canal connected 400 million East Indians with 200 million Europeans. At one stroke the two most populous continents of the earth were given the cheapest and quickest transportation route.

Now South America is still a country for settlement as well as for development. Only after a person has roamed over that vast territory from Panama to southern Argentina does he realize the sparseness of its settlement and the immense possibilities of its future. Even by touching at its ports he gets a false impression of the continent's population. He sees Buenos Aires with its skyscrapers, its big hotels, and its busy thoroughfares, and he can scarcely realize that it is at the threshold of a still unsettled country, a country of immense cattle ranches like those in our own West twenty or thirty years ago. In Uruguay, one seventh of the people live in Montevideo. The land is held in enormous tracts by wealthy "estancieros" (ranchmen) and the Government is just now trying, by adopting the European scheme of furnishing money at cheap rates to small farmers, to build up a substantial agricultural class. If we touch at the coast cities of Brazil, or even traverse the southern provinces, we get no idea of the astoundingly vast unsettled regions in the basin of the Amazon or in the table lands of the interior.

Therefore, the greatest effect of the Canal is to be in the people it will bring. They will compromise with the present inhabitants of the country to build a greatly altered, perhaps a new, South America, industrially and politically. This change has begun in one country already. Argentina has become a melting pot, and her institutions have felt the change, her commerce has grown beneath its influence, until to-day that country has the second largest foreign trade in the Western Hemisphere. Argentina has received most of the immigration because of the steamship lines from her ports to Europe. The remainder of it has gone only to Brazil and Chile. Now the Panama Canal will bring the steamship lines to the West Coast.

Let us consider what this immigration will mean to the West Coast of South America. (Peru holds the oldest Caucasian civilization of the Western world. I studied there, in the oldest seat of learning in the Western Hemisphere, an institution many years older than my own Harvard.) The Spaniards enslaved the natives but, in time, as so often happens, the conquered in arms became almost dominant in blood. Since that first settlement, Peru has received little new immigration. The benefit of the Spanish influx is dying out. This is true as well of the other countries of northern South America; of Ecuador, of Colombia, and of Venezuela. Bolivia is still almost an Indian country. The immigration which the Canal will bring is certain to revolutionize these countries industrially and probably politically.

The new immigration will give to Peru, for example, new laboring classes. In time it will fill the great void felt to-day — the utter lack of a solid middle class. It will give hands with which to cultivate the soil and energetic merchants to sell the soil's products. One of the most commercial activities of South America is fruit growing. Let us apply the benefits of immigration to the fruit industry of Peru. Wine of very good quality is produced in the Ica Valley. The industry has been carried on for three centuries, since it was first introduced by the Spanish, but, as no people followed them, for lack of labor it has never received any real development. Give this valley new immigration from Spain, Italy, and the islands of the Mediterranean, and you have at once the possibility of a thriving industry.

The banana industry exists to-day successfully in northern Peru, Ecuador, and Colombia, although it is very little developed. The truth is that there is

no market for the product at present, except in Chile. The Canal will give to these countries a market for their bananas, and new immigration will develop the industry.

I have bought pineapples at two for a cent in Lambayeque, Peru. That town is now being connected by railroad with the sea coast. The Canal will give the pineapple growers a market in the United States for their fruit, but Peru will need new blood and virile wage earners if she is to develop these resources. On the west coast of Colombja they are now building a road from Buenaventura to Cali which will place within three or four days of the Isthmus one of the greatest tropical fruit growing districts in the world. It may not be many years before the Peruvian "palta" will be on sale in the fruit stores of New York City.

There are also opportunities for the development of new industries. Peruvian coffee — and I have never tasted better coffee than is grown on the plantations of northern Peru — is produced now only as a garden product for the use of the owners of these plantations, who live in Lima. Italian immigration gave the first impulse to the enormous development of the coffee industry in Brazil. Why shouldn't it do as much for Peru?

Directly, then, immigration into South America will mean cheap, good labor, and, indirectly, it will mean a steadying influence politically upon the governments and a quickening influence upon the industrial life of the nations. The American investor, the American exporter, can both count these changes to their benefit. All these changes have been seen in the Argentine Republic. Half of the people of that country either came there since 1857 or are descended from people who arrived there since that year. Therefore, Argentina is no longer strictly Latin-American in the sense that the northwestern countries are. It is cosmopolitan. The peoples of both southern and northern Europe have placed an indelible stamp upon the nation's institutions. Therefore, the country's commerce has grown, and the investment of foreign capital in the Argentine Republic has increased. It is no longer a country of politics but a country of industry.

WHY OUR CITIES WILL BURN UP

NEW ORLEANS THE MOST PERILOUS OF THIRTEEN CITIES WITH THE GREATEST FIRE DANGER — PRACTICAL METHODS OF MUNICIPAL FORTIFICATION

BY

WALTER S. HIATT

THERE is not a city in the United States that does not daily escape destruction by fire. So fully is this known to the insurance companies, which have the largest stake in that danger, that they can tell you exactly the "conflagration centre" of every important city — can put their finger on the map of every one of the 240 principal cities and say, "Here, at this spot, by all the laws of probability, one day a fire will start that man cannot master, that will sweep your city and do to it what fire has already done to Chicago, to San Francisco, to Baltimore."

This article is written to explain how the insurance companies learned this startling fact, how they know that these things must happen, and what they are doing to avert catastrophes that must result in the loss of millions of money and in the loss of many lives.

The National Board of Fire Underwriters is the organization that has caused a nation-wide study of fire hazard to be made, and the reports of its fire engineers — members of a new and valuable pro-

fession — give a remarkable picture of the danger that confronts all American cities. This organization is composed of representatives of all the principal fire insurance companies, and its business is to study the science of fire risks and to take preventive measures to decrease them. Mr. George W. Babb, of New York, is its president and Mr. George W. Hoyt, of New York, is chairman of its Committee on Fire Prevention.

THE "CONFLAGRATION CENTRES"

Mr. Hoyt's committee knows, for example, that New Orleans has the greatest fire hazard of all American cities, that the point at which its almost certain great fire will start will be not far from the intersection of Camp, Chartres, and Canal streets, and that the conflagration district most likely to be swept spreads like a fan from the Mississippi levee to North and South Rampart streets, touching St. Joseph Street on the south and St. Louis Street on the north. The committee knows also:

That the conflagration centre of Seattle is near the intersections of First, Second, and Third avenues and James, Cherry, and Columbia streets.

That the conflagration centre of Boston is bounded by Boylston, Tremont, Washington, and Court streets.

That the conflagration centre of Philadelphia is near Eighth and Market streets; and that a minor conflagration centre is in the district bounded by the Delaware River and by Poplar, North Sixth, and Somerset streets.

That the conflagration centre of St. Louis is a triangular section rising from the levee to an apex at Fourteenth Street, skirted by Poplar and Carr streets, and with its central zone near Washington Avenue and Broadway.

That the conflagration centres of Chicago are the lumber district, extending along the South Branch of the Chicago River between Morgan and Hayne streets; and the stockyards district, bounded by South Halsted, Ashland, 47th and 39th streets.

That the conflagration centre of Kansas City is not far from Ninth and Delaware streets; of Mobile, near Dauphin and Royal streets; of Hartford, the block bounded by Main, Asylum, Trumbull, and Pratt streets, in the heart of six other hazardous blocks; of Cincinnati, Fourth Street near the intersections of Vine and Elm streets.

And Mr. Hoyt's committee knows that the thirteen cities which in all probability will burn next are the following, named in the order of their fire hazard, the greatest risk named first: New Orleans, Seattle, Boston, Cincinnati, Philadelphia, Chicago, New York, St. Louis, Kansas City, Mobile, Richmond (Va.), Hartford, and Lawrence (Mass.). Many others have a fire hazard that ranks them only a little below these.

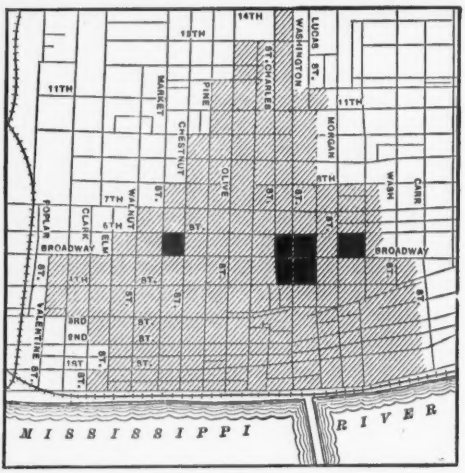
FIRE PREVENTION AS A SCIENCE

How do the Fire Underwriters know these things?

The conflagration possibilities of American cities were not realized until the Baltimore fire in 1904, when forty millions of dollars went up in smoke. Then, the San Francisco disaster of 1906 wiped out the earnings of insurance companies for the 47 years previous—three hundred and fifty millions was the fire loss — and many companies were forced out of business.

With the lesson from Baltimore, that a city with few previous severe losses might readily burn, a committee of twenty men from the National Board visited forty or more cities and showed how it was possible for these cities to go. Indignant citizens accused the committee of trying to boost insurance rates and protested that their beautiful cities could not burn. Unfortunately, however, some of the cities did burn, and in the way predicted. This work of locating fire centres has since assumed such proportions that it has been turned over to the Fire Prevention Committee of the National Board, with Mr. George W. Hoyt as chairman and Mr. George W. Booth as chief engineer, assisted by a corps of trained fire engineers. Altogether, 240 cities have been inspected thus far. Where the cities are growing rapidly, or where any of them ask for special aid, such cities are reported on as often as once a year.

These reports are impartial and point



THE FIRE DANGER OF ST. LOUIS

THE "CONGESTED VALUE DISTRICT," WHICH HAS ITS BASE ALONG THE LEVEE AND RISES TO AN APEX AT FOURTEENTH STREET. THE "CONFLAGRATION CENTRES" ARE INDICATED BY BLACK SQUARES

out defective conditions in the fire departments, in the water works, in the streets, in the electric lighting, structural hazards in buildings, fire hazards in factories, and also in the political conditions. If there has been graft in city contracts for fire, water, or street supplies, the fact is baldly stated. The reports point to the danger zone and generally add that if the fire starts in time of high wind; or drought, when the water supply is low; or in time of flood, when the firemen cannot work, or the water mains are choked; or in winter, when the mains are frozen, the city is likely to be burned up. Special attention is given to hotels and department stores, fire in either of which is likely to result in great loss of life.

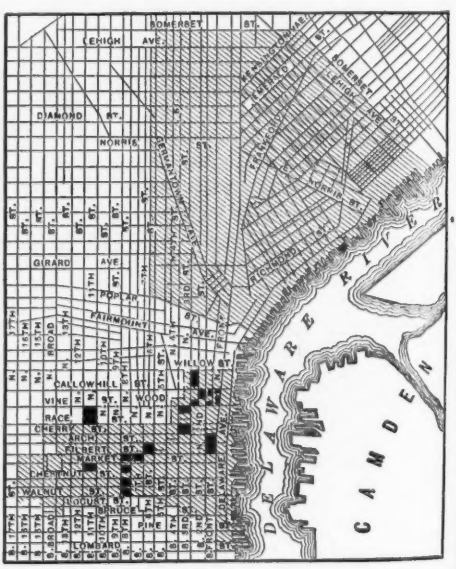
New Orleans stands unique among the thirteen cities named. But as a conflagration possibility, its conditions are illuminative, for they are typical, if exaggerated, of the fire hazards of all American cities.

The hazard of New Orleans lies near and in her famed French quarter, to the north of Canal Street, on its down-river side. Like many Southern cities, New Orleans was built to keep cool. So, not only in dwellings but in business houses, air-wells are found running from top to bottom. This gives the desired circulation of air. There are also many quaint court yards. Both violate all the principles of safety.

New Orleans has also the common and characteristic building and factory hazards of other American cities. This conflagration district, including millions of dollars in values, consists of 109 blocks, built up principally of two-, three-, four-, and five-story frame-joisted brick buildings, "the serious inherent deficiencies of which," says the report of the engineers, "are augmented by light and poor walls, excessive areas, open elevator, stair, and light shafts, and by unprotected mutually exposed windows — all which *preventable* defects exist in great numbers."

The high values represented consist of hotels, department stores, cotton warehouses, rice, sugar, and molasses factories, and liquor and moss storages.

When the engineers made public their report on the city about two years ago, the good citizens of New Orleans — as they have done in other cities under the same spur — rose up as a man and damned them as agents of the vested interests.



THE TWO DANGER ZONES IN PHILADELPHIA

THE GREATER OF WHICH HAS ITS CENTRE NEAR THE JUNCTION OF EIGHTH AND MARKET STREETS. THE LESSER LIES ALONG THE RIVER BETWEEN POPLAR AND SOMERSET STREETS

After a time the good sense of the citizens came to the rescue and a movement was started to save the city from the predicted conflagration. The Progressive Union of New Orleans in particular took up the fight, and firemen were told that they had to depend on their efficiency for their jobs, not on their influence.

The fire chief was made more than a figurehead—and nearly every chief knows what to do to protect a city, if let alone by the politicians. The city has further begun enforcing her building code, her electric light and explosive ordinances. New buildings are partly fire-proof, old ones are protected by wire glass, automatic alarm and sprinkler systems, "water blanket" systems, and other devices.

The result of the movement is shown in the present fire loss of New Orleans. Last year it was $1.18 per person, or $406,765 for the city. Previous years showed a per capita loss of $4.27 per person, or a total for the city per year of $1,320,436.

But the city still has no high pressure system; and she cannot tear down all at once her old buildings. The conflagration centre of the city has but one fire break — the 170 feet width of Canal Street.

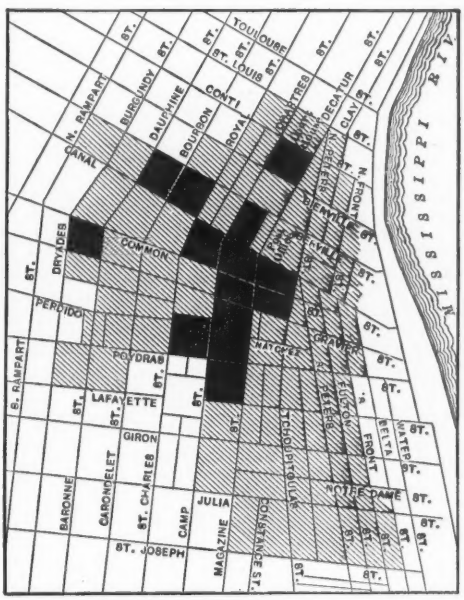
"The only salvation for New Orleans," the engineer of the National Board of Fire Underwriters said to me, "is for her citizens to keep fires from starting, or to get to them and put them out while they are yet small."

Seattle is another city of typical fire hazards. "The natural anarchy of the American temperament does not readily respond to admonition," says Franklin H. Wentworth, secretary of the National Fire Prevention Association, in one of his wonderful monographs on the prevention of fire. In thriving Seattle, people are too busy to heed the warnings of the fire engineers who visited their city two years ago. The startling report of the inspecting corps of engineers produced hardly a ripple.

Yet Seattle has three hazards. One is the shingle roofs of the residential section, another is the shingle, lumber, and wood plants in Ballard and Fremont, and the third lies in the conflagration district proper — the business section off Elliott Bay. Given a fire in a high wind, flying brands could easily set fire to the whole city. This happened in Chelsea and in Houston, Tex., and in many other cities.

Seattle, a city of 260,000, has grown rapidly since the opening of Alaska. Dwellings and business buildings have gone up with the rapidity of haphazard summer colonies. Fire could take hold as easily as it did in the Coney Island resorts in 1911, when two and a quarter million dollars' worth of property vanished in thin air.

The conflagration district proper, in the high value business district, extends for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ST. CHARLES
CAMP
JULIA
MAGAZINE
CONSTANCE ST.
ST. JOSEPH
BARONNE
TOULOUSE
ST. LOUIS
ST. PETER
ST. ANN
ST. PHILIP
ST. JAMES
ST. JOHN
ST. FRANCIS
ST. GASTON
ST. MARY
ST. ANDREW
ST. THOMAS
ST. DELPHINE
ST. ROBERT E. LEE
DELTA
WATER
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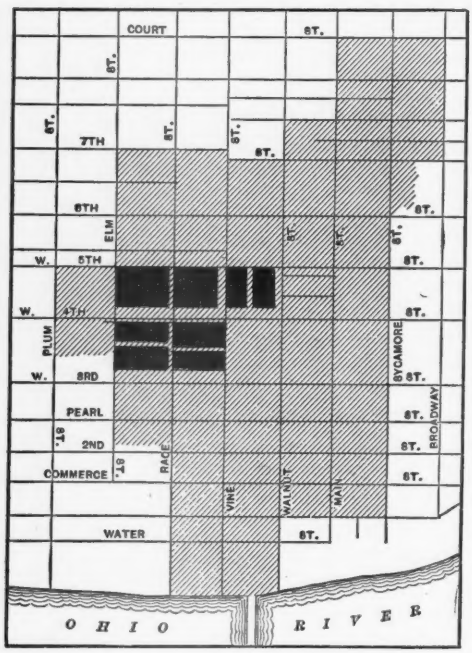
ST. CLAUDE
ST. DAME
ST. ROCH
ST. MAURICE
ST. ALBANS
ST. ROSE
ST. ANTHONY
ST. ANTOINE
ST. ANNE
ST. MARIE
ST. LOUIS
ST. CLEMENT
ST. CLARA
ST. PAUL
ST. JOHN BERCHMANS
ST. ALEXANDER
ST. ROBERT
ST. ANDREW
ST. THOMAS
ST. DELPHINE
ST. ROBERT E. LEE

one to three stories higher on the downhill side and give a stepped-up effect, facilitating the spread of fire up the hill, which is about the direction of high winds."

Seattle has as many high winds as any city in the United States. Forty-mile gales occur there seven times a year. The prevailing direction of these winds is northwest. A fire starting in Occidental Avenue in time of high wind could easily sweep the entire business section and scatter brands for a mile over the city. While



"CONGESTED VALUE DISTRICT," CINCINNATI
IN WHICH THE FIRE DANGER IS GREATEST ON FOURTH STREET NEAR THE INTERSECTIONS OF VINE AND ELM

the city proper has a fair water supply and a fairly efficient fire department, Ballard and Fremont are not well protected, and practically no essential precautions are taken against dangerous fires in these lumber districts. Of the fifty-nine big fire losses in 1910 and 1911, fifteen came from lumber yards and wood-working plants. One of these was at Waters, Mich., and another at Marinette, Wis. Had either taken place in or near a big city, the loss might have been the city.

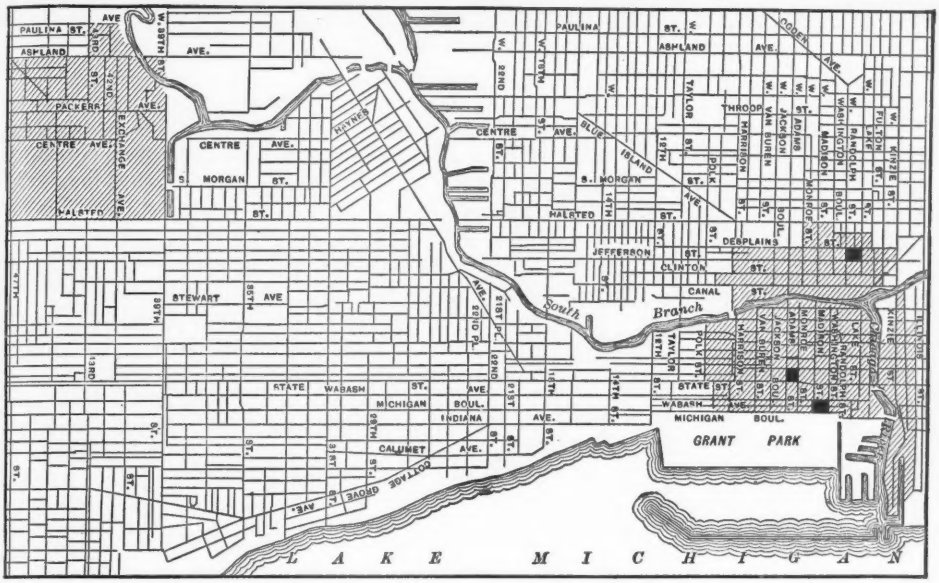
Boston to-day presents the greatest conflagration hazard of any large city on the Atlantic seaboard. The centre of the congested value and conflagration district is along Washington Street, a narrow, winding way of department stores and office buildings, off which run many other narrow streets and alleys, built up with inaccessible high-storied fire-traps. The blocks between Washington and Tremont are the worst of many bad blocks. In general, the blocks through Washington from Boylston to Merrimac are bad.

Many reports have been made on Boston. The Chamber of Commerce fire prevention committee, with Mr. Clarence H. Blackall as chairman, issued a recent report recommending a high pressure water service, the creation of a bureau to investigate the causes of fires and to locate the responsibility as a coroner's jury investigates a crime, and, finally, the passage of ordinances compelling the installation of sprinkler systems in dangerous buildings.

"If a certain high-storied, frame-joisted, brick firetrap on Market Street, in Philadelphia, ever gets going," said Mr. Henry A. Fiske, a fire engineer of authority and former Chairman of the National Fire Protection Association, "she'll throw her brands half way across New Jersey. That corner on which she stands is known to insurance men the country over."

This city, the first home of American fire insurance, occupies the unusual position of having a high potential hazard with a moderate probable hazard. Notwithstanding that her fire department has been classed as notably inefficient because of politics, she has had but two fires of any consequence, one in 1850 and one in 1865. A city of 1,600,000, her present loss per person per year is $1.37, with 3,878 fires. This low loss is attributed partly to brick construction throughout the city and partly to luck.

She has two distinct conflagration centres, the chief of which is in the poorly built business section. It lies in the east side of the neck of the bottle formed by the Schuylkill and Delaware rivers. Colored out on a map, the district rises tower-like from the Delaware to the City Hall. It consists of 306 blocks. Eighteen of them are highly hazardous and are zig-zagged



WHERE TWO BIG FIRE HAZARDS LIE IN CHICAGO

IN THE RETAIL AND WHOLESALE BUSINESS DISTRICT, AND IN THE STOCK YARDS ON ASHLAND STREET BETWEEN FORTY-SEVENTH AND FORTY-NINTH STREETS

from top to bottom, most numerous between Filbert and Walnut streets, along Eighth and Ninth streets. The minor conflagration centre lies a half mile to the north along the Delaware. It is bounded by the river, by Poplar, North Sixth, and Somerset streets. Here are found lumber storages, wood-working plants, ship yards, carpet, hat, paper, wood box, and knitting factories.

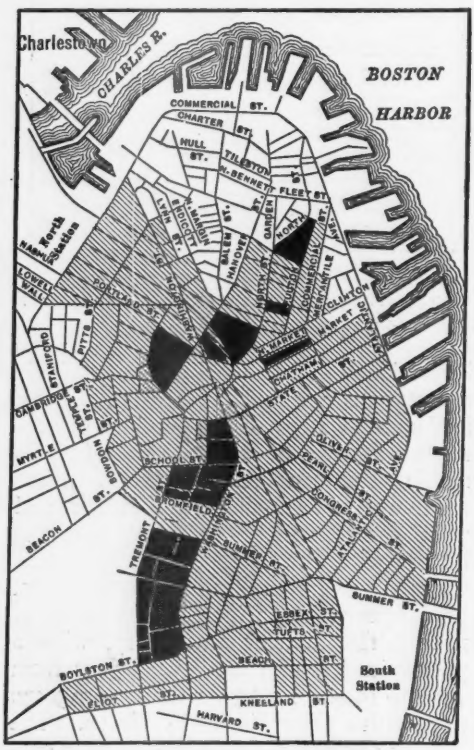
Mr. Powell Evans, a wealthy and progressive citizen, is chairman of a fire prevention committee which was formed after the recent severe report of the engineers of the National Board of Fire Underwriters. Improvements are to be made in the fire and water departments and citizens are to be educated in fire prevention. It is a big job to fortify the city against fire. Water mains laid in 1804 and in 1817 must be ripped up before the fire comes along that will require a whole river of water to put out.

Somehow, one feels that New York is really too big to be burned up. Yet fire engineers have repeatedly predicted such a catastrophe.

A corps of engineers of the National Board of Fire Underwriters concluded an inspection of Chicago in July, 1912. This report calls particular attention to the inadequate water and fire department protection and to the congestion of inflammable, shingle-roofed dwellings, which themselves are a conflagration menace and which are constantly threatened by flying brands of a fire in time of high winds. Chicago has forgotten the big fire of 1871. Every year sees an increasing number of fires. The number was 5,513, with a per capita loss of $2.40, every year from 1900 to 1909. Last year there were 9,130 fires, with a per capita loss of $2.59. The lumber and frame stockyard districts constitute the most acute peril, because of the flying brand danger. Near the junction of Dearborn and Monroe Streets, the centre of the congested value district, is the most highly dangerous business block.

When Kansas City burns, the fire will probably start not far from Ninth and Delaware streets, this point being the centre of the retail stores, offices, and hotels and near the wholesale district. The conflagration district consists of 52 blocks, 12 long by 3 to 10 wide, bounded by McGee, Baltimore, Second, and Thirteenth streets.

A fair sample of the class of buildings in this district is a six-story general merchandise store, brick, with frame joists, on Delaware Street, full of inflammable material and without sprinkler system or other effective protection. Kansas City has no automatic fire alarm system; it depends wholly on telephone service. Late at night, early in the morning, or on a Sunday, when public and private telephones cannot be quickly got at to give



BOSTON, THIRD IN DEGREE OF PERIL

BECAUSE OF THE IRREGULARITY AND NARROWNESS OF ITS STREETS, THE MOST DANGEROUS OF WHICH LIE IN THE DISTRICT BOUNDED BY WASHINGTON, TREMONT, BOYLSTON, AND COURT STREETS

a fire alarm, a fire, even if discovered, can get a fine headway here.

What has been said regarding the cities already named is true of countless smaller cities. Mobile, Ala., may some time become a victim of her inadequate water supply, or of the inherent and neglected dangers in her buildings. In Lawrence, Mass., graft and politics are increasing the fire menace. Like many other mill towns it has maintained a low fire loss, in spite of a high potential hazard, because of the fire prevention lesson learned from the mills. Her fire centre is along Essex Street, between Broadway and Newbury Street. Hartford, Conn., a fire insurance centre, has a high potential hazard with 26 bad blocks.

There is a way by which the cities may get rid of their burden, which amounts to a general per capita fire tax of about $2.75 per year of which the insurance companies merely act as the tax gatherers; and this is by intelligent organization.

Thirty years ago the most hazardous risk was that of the cotton mills of New England. Fire insurance premiums became prohibitive to carrying on the business. The mill owners organized the New England Factory Mutual Insurance Companies and set to work to *prevent* fires by watchfulness. Although their mills are still of wood, their loss is one thirtieth what it was formerly and is now the lowest of any kind of construction in the United States. They have a fire college connected with the Massachusetts Institute of Technology in which fire causes and the prevention thereof are studied and taught.

To-day any individual mill or factory owner may apply for information at this college and learn how to protect his business. Other insurance companies have followed the example of these mill men of New England, and to-day individuals may apply for help at the National Fire Protection Association in Boston, or at the Underwriters' Laboratories in Chicago. A city may apply at the National Board of Fire Underwriters, in New York, and get the help of an engineer to show it how to organize to prevent fire. In nearly every large city there is now also located a fire prevention bureau, maintained by the insurance companies as rate adjusters and as sources of information. The owner of house, building, or factory is told that his rate is so and so, but that if he will make certain improvements in the way of fire prevention — such as the installation of sprinkler systems, automatic fire alarms, and fire pails — his rate will be lowered.

A very definite prevention programme is

being carried out among the cities of Ohio, through the medium of the state fire marshal. This programme includes rigid inspections of all dwellings and business houses every month by members of the fire departments, instruction in the chemistry of fire in the public schools, and rigid building laws, including the power to condemn old fire-traps which menace the con-

A BIG FIRE ON THE WATERFRONT IN BROOKLYN

A BLAZE OF THE KIND WHICH, UNLESS PROMPTLY CHECKED, EASILY DEVELOPS INTO A CONFLAGRATION THAT MAY DESTROY A WHOLE CITY

flagration districts. This office was created by the legislature in 1900 and since that date the fire loss in the state has been slowly decreasing. In 1901 it was $11,196,189. It is now slightly in excess of six millions. The law is far more rigidly applied than in New York State, every month from two to three hundred buildings being ordered torn down in such cities as Cleveland, Toledo, Cincinnati, and Dayton. John W. Zuber, the state fire marshal, is also carrying on a campaign of educating the public not to start fires. He makes close investigation into fires of suspicious origin and yearly secures nearly a hundred convictions for arson. Michigan and Wisconsin are slowly following the example of Ohio.

There is a way to solve the conflagration problem in a measure, a way that is recommended as the essence of their experience by such experts as Franklin H. Wentworth; Henry A. Fiske; Prof. Ira H. Woolson, a Columbia University engineer, now building-code expert of the National Board of Underwriters; W. H. Merrill, of the Chicago Underwriters' Laboratories; and W. D. Mathews, of the Chicago Board of Underwriters.

THE GREAT FIRE IN SAN FRANCISCO IN 1906,

THE RUINS OF BALTIMORE

In the heart of every danger zone there are streets crossing at right angles, lined with buildings at least of brick if not of stone or concrete. Upon the map these blocks form a more or less complete Maltese cross. These buildings are valueless as a fire stop because of their thin glass windows and wooden frames. At Baltimore and at San Francisco such buildings were easily attacked, the fire breaking out the thin glass and converting every structure into horizontal flues.

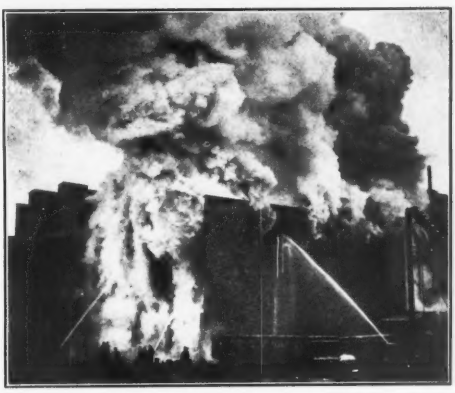
The city that will trace out this Maltese cross from its central danger zone and equip the buildings with metal frame

WHAT FIRE IS LIKELY TO DO IN EVERY AMERICAN CITY,

CAUSED BY THE FAILURE OF THE WATER SUPPLY

windows and wired glass will at once possess the equivalent of substantial fire walls, thus protecting each of the four centres one against the other. Buildings in each section may protect themselves one against the other by the same inexpensive yet strategic procedure. Wired glass, it has been repeatedly proven, withstands the hottest fire.

By following this plan much will be done to eliminate the conflagration hazard of the cities. Wired glass not only keeps fires out but it keeps them in, and fires can thus be made unit fires, to be held in check until extinguished by the firemen.



A DANGEROUS FIRE IN DULUTH

HERE ILLUSTRATED BY THE DEVASTATION OF CHELSEA, MASS.

THE ASSUAN DAM

A MIGHTY STRUCTURE THAT ADDS MILLIONS OF ACRES TO THE ARABLE LAND OF EGYPT

BY

M. E. J. CZARNOMSKA

BY SHAPE and conditions, Egypt offered herself to not only the most compact system of irrigation in the world, but the most spectacular. As the Great Assuan Dam now stands completed, one must recognize that she has achieved it. It stirs imagination, even emotion. The dam that stores the water, the barrages that distribute it, the lesser weirs and sluices of the large canals with their offshoots that traverse the provinces — all are on an enormous scale, one great work to water a valley to feed a nation.

Three miles above Assuan the Great Dam stretches a mile and a quarter from bank to bank across the Nile. This year's flood is over. The brown water has rushed through to spread upon and fertilize the fields. Now the sluices are closed, and the gigantic bulwark, apparently a solid mass, towers nearly 80 feet above the river. Behind it the lake — 111 miles long when first formed ten years ago, now to be extended by 40 miles — is filling. It will store 2,000,000,000 tons of water for use next spring. The overplus will escape by the navigation channel till the gradual opening of the sluices in the dry season. Three magnificent barrages: at Esneh, 100 miles north of Assuan; at Assiout, 275 miles farther north; and a third, 260 miles farther still and twelve below Cairo

AN EGYPTIAN IRRIGATION DYKE

BROKEN TO LET THE WATER THROUGH TO A LOWER LEVEL AFTER THE UPLAND HAS BEEN IRRIGATED

(where the Nile divides to cross the Delta) will distribute this water as it issues from the dam by holding it back till the canals of the provinces are filled. The vast structures, massive, simple, built solely to sustain the pressure upon them, accord wonderfully with the sober external aspect of the temples that neighbor them.

With the first opening of the dam in December, 1902, science took under absolute control the "life, strength, and prosperity" of Egypt. In no other country do these depend upon a single agent. In Egypt, the Nile alone sustains the land it has created. The White Nile, the outlet of Lakes Albert and Victoria, after a tumultuous course near the equator, filters lazily for six hundred miles through the reeds and grasses of broad swamps, with the slightest slope a river can have. It comes to Khartoum free of silt, with the milky tinge that gives it its

THE SLUICES OPENED AT ASSUAN
TO RELEASE EXCESS WATER FROM THE RESERVOIR ABOVE

INCREASING THE HEIGHT OF THE ASSUAN DAM BY 16 FEET
TO ENLARGE THE ALREADY IMMENSE RESERVOIR SO THAT IT WILL HENCEFORTH CONTAIN 2 BILLION TONS OF WATER, MAKING A LAKE 151 MILES LONG

A GLIMPSE OF THE MODERN

WHICH WILL BE VASTLY EXTENDED BY THE NEW ENLARGED ASSUAN DAM, UNDER THE

THE ANCIENT WATER-GAUGE OF THE NILE

name. Here it is dammed back for several months by the rush of the Blue Nile, and forms a vast reservoir. Not until October, when the force of the Blue Nile is spent do its resources come into play. Thenceforward till the next flood, its full and constant flow alone makes Egypt habitable.

But the ancient system of irrigation, that had worked well under a despotism with serf-labor, could not meet the demands of modern industries, nor enable Egypt to compete with western nations. Mohammed Ali, the ambitious pasha of Egypt from 1803 to 1848, tried to introduce scientific irrigation; but the barrage he built below Cairo soon cracked from the foundation up and was abandoned. His grandson, Ismail, introduced the raising of sugar-cane, which requires much water. He provided for it in the old way by cutting another big canal, which was soon clogged and could only be cleared at enormous expense, or by forced labor.

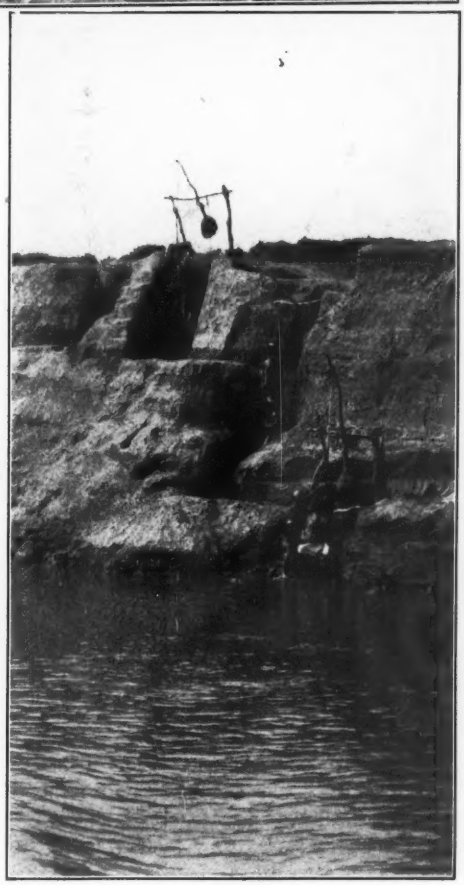
In 1882, however, England took the responsibility for the future solvency of Egypt. Her first care was the water-supply. By 1890, Mohammed's barrage was repaired and in use, and much of the old "basin irrigation" modernized. It

EGYPTIAN IRRIGATION SYSTEM

STORES OF WATER THAT WILL BE HELD BY THE SHADOW OF THE PYRAMID AT THE LEFT

was soon evident that enormous power was going to waste for lack of a reservoir to store the water that ran fruitlessly into the sea by millions of tons per hour in winter, leaving the land to gasp for it in summer. Therefore a dam was planned, and at the same time a second barrage at Assiout to provide for Ismail's ill-starred canals cheme.

The building of the barrage was comparatively simple, but that of the dam presented enormous difficulties. From December to June the river divides at Assuan into five channels. The masonry in each was built up separately in the successive dry seasons by a force of from 11,000 to 13,000 men. The difficulty lay in the building of the preliminary construction-dams. Even the reduced current tossed a 5-ton block along as if it were a football, broke through the temporary dams and carried away the car tracks, steam-cranes, and car-loads of stone upon them. Still, in spite of drawbacks, the dam was finished within contract-time. Its storage capacity of 1,000,000,000 cubic metres (tons) provided fully not only for the valley and the Delta, but for the irrigation of 420,000 acres south of the dam, hitherto barren.



AN OLD METHOD OF IRRIGATION

And then, as everything worked happily for five years, it was resolved to double the capacity of the dam; that is, to realize the plan first proposed: namely, *to store the full amount of water possible without injury to navigation*. The lake would be 23 feet deeper; the wall, 16.4 feet higher, the difference to be taken from the "free face" above high-water level, formerly unnecessarily high. Also, to complete the whole system of water supply, another barrage was contracted for at Esneh to provide for the large province of Keneh. It was finished in 1909, while the additions to the dam were in progress.

These were apparently a simple matter; only to remove the northern facing and build up the masonry at a larger angle. The casual observer could see no more. But the wall was greatly broadened and strengthened; and a new lock was added to the four already in place.

Then the day after Christmas, 1909, the Delta barrage, without warning, shivered and cracked. A half hour later, part of it fell.

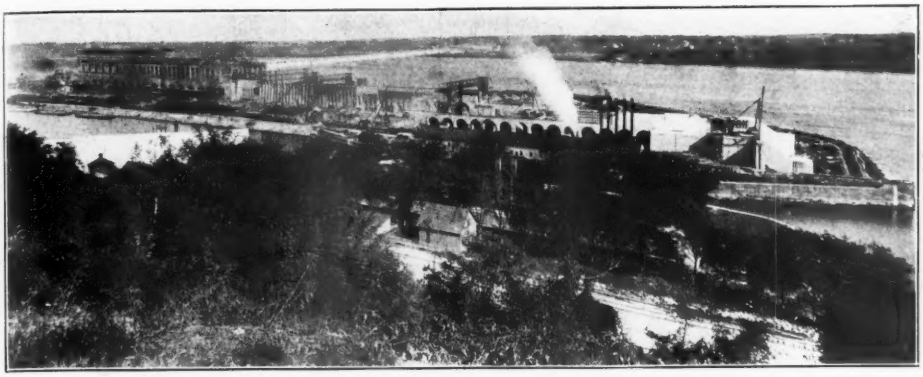
The case was serious and had to be seen to in hot haste. The method was drastic. New foundations were dug and laid in solid land west and north of the old, at the sacrifice of part of the beautiful Public Gardens. And the distribution of the pressure over the present vast wall-surface makes it entirely stable.

THE LOCK IN THE DAM OF THE NILE AT ESNEH

THE VESSELS DRIFT INTO THE LOCK STERN FOREMOST AND ARE WHIRLED ABOUT BY THE EDDIES SO THAT THEIR BOWS ARE DOWNSTREAM WHEN THEY COME OUT

A million acres won from the desert will soon be under cultivation in Nubia. A large part will be for cotton; Egypt is already the third cotton-producing nation; she may soon be the second. The rest will be mostly for sugar-cane. Immense sugar factories are at work all along the Nile, and sugar-cane has become the chief luxury of the natives.

A perennial water supply for Egypt seems now assured. But the price will be eternal vigilance.



THE GREAT MISSISSIPPI DAM

THAT WILL MAKE THE RIVER DEVELOP 200,000 ELECTRICAL HORSE-POWER

BY

HARRY BRISTOL KIRKLAND

THE greatest hydro-electric power plant in the world is now being built on the Mississippi River between Keokuk, Ia., and Hamilton, Ill. The plant will have 30 water-wheel units of a total capacity of 300,000 horse-power, and it will be capable of delivering 200,000 horse-power to its customers. In spite of the low cost of coal in this region, the Mississippi can create this enormous horse-power more cheaply than it can be made by steam.

The generation of this power was conceived more than half a century ago. Gen. Robert E. Lee, when a lieutenant in the army, was stationed near Keokuk. He made a report on the water-power that could be obtained from these Des Moines Rapids of the Mississippi, though as a practical engineer he knew that the time had not arrived for its utilization.

But the people became interested and have kept eternally at it. They talked and planned about the project for years. Various promoters appeared, raised their drooping hopes, and then disappeared. Finally a promoting corporation was organized by prominent citizens of surrounding towns to obtain the rights needed to promote the project and to secure an engineer and money for the work. The city councils of Keokuk and of Hamilton appropriated public money, by unanimous consent of the citizens of the two cities, to this promoting organization. This money was later paid back into the city treasuries.

The promoters got the necessary permission from Congress to dam the river and then were ready for an engineer. They let their wants be known, and there was no lack of applicants for the job. Among others came Mr. Hugh L. Cooper. When they intimated that they would like to be shown that he knew how to build a dam he got a private car and took them to Niagara to show them what he had done there.

They were convinced. So they got an engineer whose ingenuity has conquered structural difficulties, and whose enthusiasm, persistence, and convincing personality have secured the coöperation of those who could command the very large amount of money necessary for the carrying out of the plans.

Standing on the high bluffs on the Iowa

THE GAP BETWEEN THE COFFER-DAMS

THE NARROW SPACE THROUGH WHICH THE MAIN CURRENT OF THE MISSISSIPPI RIVER, AT KEOKUK, IA., FLOWED ON JULY 20, 1912

side of the Mississippi River at Keokuk one sees a valley two miles wide, more than half covered by the waters of the river. The west bank of the river is lined by the Burlington Railroad and the Des Moines Rapids Canal. This canal was built in the 'seventies to enable the river boats to pass the treacherous rapids. When the new dam is completed, this canal will be submerged beneath the lake which will form above the dam and a single lock will take the place of the three now in use on the old canal. The high bluffs on either side close to the banks, the solid bed of rock, and the comparatively steep slope in the bed of the river for twelve miles above the site, make it the most advantageous place along the Mississippi for the construction of a dam.

The plans for the power house provide for the instalment of thirty mammoth generators of 10,000 horse-power each. Each of the generators of electric power will be impelled by a turbine water-wheel. These 10,000 horse-power units are the largest ever built, and the weight of the machinery in each will be about 400 tons. The water, in imparting the energy to the 30 turbines, will pass through openings in the base of the power house and drop about 32 feet. Through each of these openings 165 tons of water will drop every minute, and impart the enormous energy of this falling weight to the turbine water wheels. The power house building stands in the river bed and forms a part of the great dam itself. The building is one third of a mile long and 132 feet wide. Its height from the bed of the river is more than 170 feet, or equal to the height of an ordinary building of fourteen stories. Besides the power house the main structures of the work are the dam, the lock, and the dry dock.

The dam — nearly a mile long — is one of the longest in the world. It has the appearance of a concrete bridge built with piers spaced at rather short intervals and spanned with arches. In reality it is a bridge with the dam built underneath it so as to fill the 119 spaces between the piers. The waste water will flow over the dam, under these arches; and steel gates, suspended from the roadway of the bridge, will operate in grooves on the piers to regulate the flow of the water over the dam.

The lock, which is being built by the power company, conforms to dimensions required by the Government. It is of the same dimensions as the locks being built by the Government in the Ohio River, 110 feet wide and 400 feet long, and in it it will be possible to lift or lower boats forty feet. It will aid navigation considerably by providing for larger vessels than the old lock, and by shortening by more than two hours the time that formerly was required to pass the seven and a half miles of rapids.

The dry dock will be built next to the Iowa shore and alongside of the new lock. It will be the largest on the river and will accommodate any vessel which can pass the lock. Boats may enter it from the upper level and after the gates are closed the water will be let out into the lower level of the river below the dam, so as to leave the boat ready for examination and repairs.

The construction of this great plant within two and a half years is the striking result based upon forty years of constant endeavor to promote the enterprise and upon forty months of constant toil on the engineering blue prints. The endeavors of a few men over a very long period have resulted in plans for work which will be

COMPLETING THE LAST SECTION OF THE COFFER-DAM

WHICH, AFTER WATER-PROOFING, ENABLED THE CONTRACTORS TO PUMP DRY THE RIVER BED DOWNSTREAM AND SO TO BUILD THE PERMANENT DAM AND POWER HOUSE

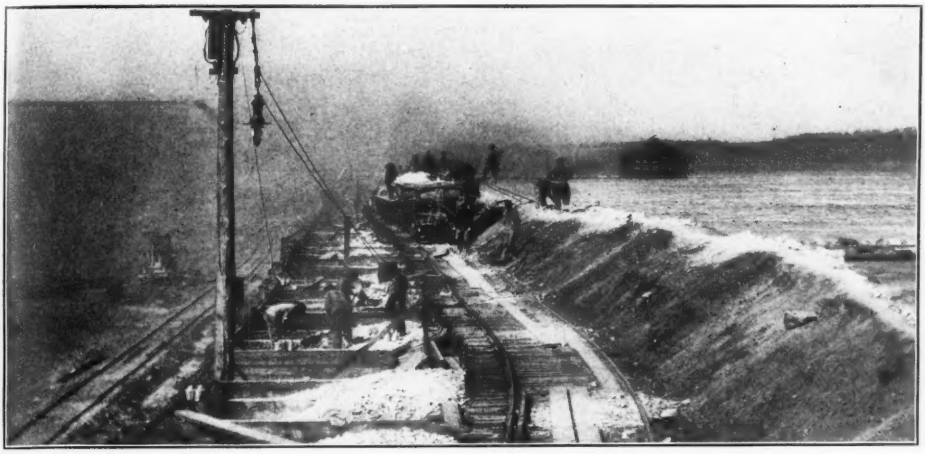
completed in a very short time. Fifteen hundred men in Mr. Cooper's efficient organization are doing things as they were planned, and on time.

The general plan divides the hydraulic construction work into two parts — the Iowa Division and the Illinois Division. The Illinois Division has the construction of the dam and the Iowa Division cares for all the other structures. All the structures are being built on the bed of the river, which has made it necessary to keep the sites dry by enclosing them with coffer-dams. The coffer-dam for the Iowa Division enclosing all the structures in that division holds the river back from thirty-nine acres of its rightful bed.

Coffer-dams are often made by driving two rows of piles around the site of the work and by filling in the space between the piles with clay; but here the bottom of the river is solid blue limestone, and the driving of piles was out of the question. So the coffer-dam was built by setting cribs or large crates in a row, filling them with rock to hold them in place, and dumping clay along the outside face of the cribs to make a water-tight bank. After the coffer-dam was built a monster centrifugal pump was set in operation on the coffer-dam to pump the water out. Several days were consumed in continuous pumping and then the bottom of the river was exposed to view — a very level surface of limestone and an excellent foundation for the structures to be built upon it.

SINKING THE LAST CRIBS ON THE UPPER LINE OF THE COFFER-DAM

A million dollars' worth of tools and construction machinery has been collected within the coffer-dams. The construction plant is the largest ever used on a work under private ownership. It includes sixteen miles of railroad and sixteen standard-gauge locomotives. Nearly three hundred cars are required for hauling materials. Nearly ten million

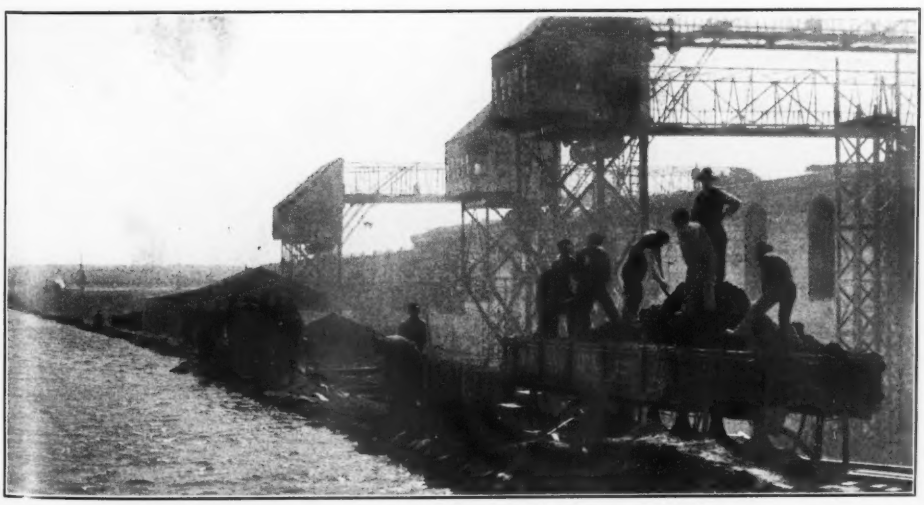


THE BATTLE AGAINST FLOODS

A DYKE OF EARTH AND SANDBAGS BUILT ABOVE THE LEVEL OF THE CRIBS DURING THE SPRING FRESHETS LAST YEAR

feet of lumber was used in making the coffer-dam, all spent on necessary but temporary work that will have to be torn away before the plant is ready for operation. A large machine shop and power plant was erected to keep tools in order and to supply compressed air to operate the rock-drills, derricks, and engines of all sorts. This use of compressed air on a large construction job is a more modern method than the former one of using a small boiler to make steam for each engine. Nearly fifty miles of pipe are used to supply the compressed air.

The concrete mixing plants are built for great capacity. There are five large mixing-machines in the Iowa mixing plant and four in the Illinois plant. If worked to their capacity, these plants could turn out nearly three thousand cubic yards of concrete in a single day — enough to build an ordinary sidewalk eight miles long. The concrete is placed in forms or moulds built of wood to form the structure,



THE COFFER-DAM ALMOST OVERWHELMED BY THE SPRING RISE

RAISING AND STRENGTHENING THE DEFENSES OF THE MAIN DAM WHILE IT WAS UNDER CONSTRUCTION

THE MAN AND—

MR. HUGH L. COOPER (CENTRE) IS THE CHIEF ENGINEER OF THE COMPANY THAT IS BUILDING THE KEOKUK DAM. MAJOR MONTGOMERY MEIGS, AT HIS RIGHT HAND, IS THE UNITED STATES ENGINEER IN CHARGE FOR THE WAR DEPARTMENT

and after a few days the forms are removed, leaving a structure of solid rock.

The sand used in the concrete mixture is pumped from the bed of the Des Moines River by a large dredge, and is dumped on the shore to be loaded into cars and brought to the work. The rock is excavated from the bed of the river within the coffer-dam, so as to make a channel for the discharge water from the power house. Luckily the amount of rock to be excavated from this channel is almost equal to that required for all the concrete in the work. It is excavated by drilling and blasting and is loaded by a large steam-shovel upon cars to be transported to the crushing and mixing plant. After passing through the mixers, the concrete is carried in buckets on flat cars to the various points on the work where the forms or moulds have been prepared for receiving it. Here it is hoisted in the buckets by large derricks or cranes and discharged into the forms.

Special cranes are used for this purpose on the power house work. These cranes are simply steel bridges which span the power house site and are supported on steel legs which move on rollers. A small trolley car with a suspending hook runs on the bridge, picks up a huge bucket of concrete weighing several tons, hoists it into the air above the labyrinth of forms, carries it to a point above its destination, and lowers it to its place.

In the construction of the dam — which is carried on by a separate organization on the Illinois side of the river — the work is so laid out that the dam itself is used to support the machinery employed for its

—THE JOB

FORM WORK OF THE SUPERSTRUCTURE OF THE POWER HOUSE WHICH WILL SHELTER HYDRAULIC GENERATORS THAT WILL PRODUCE 200,000 CONTINUOUS ELECTRICAL HORSE-POWER FROM THE FALL OF THE MISSISSIPPI RIVER

continuous extension. Three tracks are laid on top of the completed portion and upon these tracks concrete and material trains run almost continuously. At the end of the bridge is a great crane with an overhanging arm that extends some distance ahead of the completed work. This crane picks up the buckets of concrete and carries them ahead over the new work and thus deposits the concrete in the forms. These forms are built of steel, for they are used over and over again on the one hundred odd piers and arches. The forms for the other structures are built of wood, as steel is economical only where many duplicate parts are required.

THE COFFER-DAM RESISTING AN ICE JAM LAST MARCH

In planning this great work, it was recognized that the dangers of at least one winter's ice and floods would have to be contended with. The Father of Waters would not be placed in harness without at least one great fight. This would come before the structures could be brought up above the flood levels in the spring of 1912. The Iowa coffer-dam was built high enough to withstand the highest flood that had been recorded in thirty years. The coffer-dam for enclosing the work on the Illinois side of the river was built only high enough to keep out the water in ordinary stages. It was planned to allow this coffer-dam to be flooded, so as not to aggravate conditions on the Iowa side where property was at stake.

The floods of 1912 on the Mississippi River will long be remembered, for they reached the highest stages ever known to those who keep the records. At Keokuk, the great work was thrice threatened with destruction within three weeks — once by the enormous impact of the moving ice against the coffer-dam, once by a flood caused by an ice jam below the work, and finally by the regular spring flood caused by melting snows, heavy rains, and swollen tributaries.

The ice in the Mississippi River usually breaks up in March or April, sometimes earlier, and it floats down the river in pieces four or five hundred feet square. The usual behavior of an ice floe is to crush and sweep out of its way anything which happens to be in its path. It was expected that such a floe would strike the upper end of the Iowa coffer-dam, and so this end was strengthened several

times, while the engineers awaited the coming of the ice. A large amount of rock was dumped into the water on the slope of the embankment in the hope that when the ice came it would push up on top of the coffer-dam and would fall back upon itself. The outer leg of the coffer-dam was exposed to the scraping action of the ice as it went by, and so this side was protected by buttresses built out at intervals into the stream. These were relied upon to break up the ice and to prevent a large field from scraping along the embankment as it went down the stream.

It became apparent in the middle of the winter that ice conditions were to be more serious than usual owing to the severe cold which caused the ice to freeze nearly three feet in thickness. The warm weather seemed somewhat late in arriving, making it more than probable that if the thaw came suddenly an enormous amount of ice would be released at once. In the anxiety of waiting extra precautions were taken. At the most exposed corner of the coffer-dam several more cribs were placed as buttresses. They were built to an extra height, armored with boiler plate, and heavily loaded with rock. A steam shovel which had been digging rock on the Illinois side of the river was brought over and placed in position to dig earth. Down in the quarry, within the coffer-dam itself, two steam shovels were kept ready to dig and load rock should this material be called for.

On the 23d of March a large body of ice broke away above the work and moved slowly downstream just far enough to lodge in the space between the Iowa and Illinois coffer-dams. In this five hundred foot gap the water was quite swift and had long since worn away its covering of ice, although the river was frozen both above and below the gap. The following day at two o'clock the ice above the dam broke away and came floating slowly down the stream. The advance floes soon reached the coffer-dam and, as had been anticipated, ice was forced up on the inclined embankment to such a height that it finally rolled backward upon the oncoming ice. Thousands of tons of ice were pushed up on the coffer-dam until it seemed that the river must surely win without further effort. But the ice began wedging itself through the passage between the Illinois and Iowa coffer-dams, where its passage was materially aided by the swift current. It finally became evident that the coffer-dam would withstand the shock, although extraordinary reinforcements were shown to have been entirely justified.

About four o'clock in the afternoon it was noticed that the water was rising very rapidly. In an hour's time the water rose to a point considerably higher than the coffer-dam had ever been called upon to stand. The cause turned out to be an ice jam in the river at Gregory, Mo., some five or six miles downstream. The ice had piled up so solidly for a distance of two miles that no water could find its way past the obstruction.

The situation at this time was very critical. The coffer-dam had been built originally to stand a stage of twelve feet of water. The back water caused by the ice jam brought the water up to a stage of seventeen feet before relief came. Men worked like beavers piling earth and sandbags on top of the coffer-dam to keep ahead of the water and to stop all leaks. To augment the difficulties, the frozen bank of the original coffer-dam began to thaw beneath the water level, causing, every now and then, large masses of earth to break off and slide down out of sight into the deep water.

Relief from this flood came after the water had risen so high that it found a new outlet around the Gregory ice gorge. On March 26th the gorge at Gregory gave way and passed down the river. But the relief was only temporary. The upper river had scarcely cleared itself from the ice when the swollen tributaries began to pour their contents into the Mississippi. The story of the following two weeks is one of continued work in raising the coffer-dam with earth and rock and sandbags. More than sixty-five thousand sandbags were used. The men realized that once the water began to stream over the top the earth would be washed away faster than it could be replaced. The water finally rose to a stage of seventeen and

eight tenths feet. With the water at this stage, a storm brought about the climax of the situation. The storm came up suddenly on the night of April 7th, and in a very short time the waves were furiously dashing against the thin wall of earth and threatening to crumble it at any moment. There were on duty at this time only about fifty men. Messengers were sent for help and one hundred men were routed out of their beds. They turned in with a will and covered the entire bank with bags of sand. The night was dark and the work was difficult. Some of the men were drenched to skin with the icy water. But when daylight came the storm subsided, and the river had begun to fall.

So the fight with the river was won. The work has now progressed to a point where no damage will be done. This winter's ice will lie in a lake of comparatively still water and will not break up, but will melt away under the rays of the sun. The spring floods of the coming years will pass over the spillways of the dam, and in July of the coming year the Father of Waters will submit to the work which has been laid out for him.

The work that has been laid out is to distribute the power to the cities and towns along the river in two long transmission lines, one north and one south from Keokuk.

One line is up the river through Fort Madison, Burlington, and Muscatine to Davenport, Ia., and the other is down the river nearly 150 miles to St. Louis. In the four towns along the northern line there are about 100,000 people. The population of St. Louis is nearly 700,000, and the public utilities company there has contracted to take 60,000 horsepower, or a little less than a third of the continuously available amount.

Northeast of Keokuk 220 miles is Chicago; a little east of south and nearly 150 miles away is St. Louis. Southwest of Keokuk about 175 miles is Kansas City. The country between is thickly settled, but as yet is not a manufacturing country. It has transportation a-plenty, but no cheap power. The Mississippi is its natural source of power and the great dam at Keokuk begins a new era in that region. The change will not be immediate, for such changes rarely are, but the possibility is there now and the actuality will in due course of time follow.

In the meanwhile, the Father of Waters has been dammed and his power transformed to human good, to turn the wheels of progress in a country already rich in agriculture which needs the supplementary development of manufacture. Potentially the dam has the effect of a coal mine at Keokuk. In the years to come it will be as economically important, to that part of the valley, as it is now spectacular.

THE GRAND OLD MAN OF WISCONSIN

HOW GOVERNOR HOARD BROUGHT CATTLE TO THE STATE AND SAVED IT FROM THE POVERTY OF ONE CROP

BY

FRANK PARKER STOCKBRIDGE

BY CHEESE FACTORIES and creameries they direct the stranger in rural Wisconsin, for cheese factories and creameries are the most striking landmarks of that country. His most striking impression is that the entire landscape of Southern Wisconsin is as picturesquely suggestive of dairying as the skyline of Pittsburgh is of the steel industry. As no picture of a rural scene in Holland is complete without a windmill, so no picture of rural Wisconsin is truthful unless it shows the round tower

at the end of the barn — the silo, infallible symbol of the dairy farm. And in the foreground of this picture are always the cows — tens of thousands, hundreds of thousands of them. There were nearly one million five hundred thousand cows in Wisconsin when the census of 1910 was taken, and it is because of these million and a half cows that the 2,333,860 human inhabitants of the commonwealth are perhaps the most prosperous farmers in America.

A SIGNIFICANT EXAMPLE

If Wisconsin held its enviable position only because of nature's bountifulness, its story would not have any great significance for other states less favorably endowed. But the truth is that almost any state can become agriculturally prosperous in the way in which Wisconsin has become prosperous. Wisconsin has been taught good farming. Mr. William D. Hoard laid the foundations of the doctrine there. Elsewhere, the Government, an individual, a railroad, the farmers' granges, or any organization or person whose interest it is to have the countryside prosper, might start the teaching.

It is a story as old as Abraham that wheat robs the soil and that cattle drop fatness. Wisconsin used to be almost exclusively a grain state, and in the early seventies, after many years of robbery, the yield had dropped to an average of eight bushels to the acre. These were lean years, for little but wheat was grown.

MEASURING BUTTER BY THE TON

Now they measure the annual butter crop of Wisconsin by the thousand tons — 105,307,357 pounds of butter made in a single year in the 1,005 creameries that dot the map almost as thickly as the stars dot the sky. And the cheese factories are even more thickly sprinkled — like the stars in the "Milky Way"— 1,928 of them, which turned out last year 145,171,035 pounds of cheese. In the southwest corner in the hill country, where the immigrants find the nearest resemblance to their native mountains, are the Swiss cheese factories, producing a larger annual output of this particular variety than comes out of Switzerland itself. Over in the east, around the shores of Lake Michigan, are grouped the German settlers, and here are the Limburger and brick cheese factories. And scattered throughout the state are the establishments in which are made the yellow American Cheddar cheese that is so common.

Under the domination of this dairying idea, Wisconsin has also developed wonderfully in the breeding of dairy cattle. It has long been the boast of old Holland that it possesses a cow to every inhabitant. In Jefferson County, Wis., a section of country twenty-four miles square, there are 36,000 people and 40,000 cows. There are fifty creameries, five condensaries, and six or seven cheese factories. The annual value of the milk produced in the county is $2,500,000. The annual sales of young dairy stock amount to nearly $800,000. These are the calves that are sold to dairymen elsewhere, without diminishing the value of the herds remaining at home. Besides dairy products, the county produces large quantities of beef, hay, and grain, and its total agricultural product is nearly six million dollars. The dairymen alone have more than two million dollars in the county's banks, and the values of their farm lands are increasing.

WILLIAM DEMPSTER HOARD

The man who started the change was William Dempster Hoard, dairyman, editor, at one time Governor, and preacher of the prosperity of good farming.

He began to be of signal service to Wisconsin in 1872, when he issued the first call for the formation of the Wisconsin Dairymen's Association. At that time he had behind him his youthful experiences in the dairy business in New York, three years of work in the Wisconsin wheat fields, a very creditable record of service in the Fourth Wisconsin Regiment during the War, a disastrous venture into the nursery business, beginning of a small country newspaper, and an entrance into politics. He had a political appointment at Madison and there he met the dairymen.

The dairy business in Wisconsin did not amount to much at that time, but the

seven men who responded to Mr. Hoard's call made a beginning. He was elected secretary of their organization.

He constituted himself a committee of one to do active missionary work. He went into the various school districts and held meetings in the interest of his propaganda, his only recompense being the slight increase in prestige and circulation which this gave his paper. By this means he succeeded at length in organizing several cheese factories, as this proved to be the easiest first step along the line of coöperation. As a result, the making of cheese increased until it reached the proportions of a staple in the state. In three years this production reached three million pounds annually, and the local market could not take care of it all. At that time it cost two and a half cents a pound to ship cheese from Wisconsin to New York City in ordinary freight cars, which meant a loss in hot weather.

MAKING A FREIGHT RATE

In 1874, therefore, Mr. Hoard induced the association to send him to Chicago to see what he could do toward securing better facilities and a reduction of the freight rates on cheese from Wisconsin to the export markets at New York, Boston, and Philadelphia. He spent two days in Chicago with not the slightest success, which convinced him that the men in charge of the railway freight business lacked an understanding of the commercial possibilities of the dairy business.

Discouraged and sick at heart, he made his way at the close of the last day to the office of Mr. W. W. Chandler, of the Star-Union Refrigerating Transportation Company, the pioneer in the enterprise, then just new, of cold-storage transportation. With slight hope of success, Mr. Hoard spoke his piece with some asperity, vexed in advance at the usual rebuff which he expected to receive.

"I represent," said he, "three million pounds of cheese seeking a safe, quick, and cheap transportation to New York City. What are you going to do about it?"

Mr. Chandler looked up slowly and said, "Who are you?"

"I am W. D. Hoard, secretary of the Wisconsin Dairymen's Association," was the reply.

"And what do you want?"

"We have organized a dairy board of trade at Watertown," answered Mr. Hoard. "Our people are ignorant of your methods and need your help. I want you to send one of your cars to Watertown and come yourself and explain it. Then I want you to make a rate of one dollar per one hundred pounds of cheese in iced cars from Wisconsin to New York, Boston, and Philadelphia."

The audacity of the Wisconsin farmer-journalist caught the business man's attention.

"Is there anything else?" he asked.

"Not now," replied Mr. Hoard. "But Mr. Chandler, if you do this it will put millions of dollars into the coffers of your company. It will clear out the clogged channels of communication and enable us to get into touch with the export demand for cheese to Great Britain, of which New York State now holds a monopoly."

Mr. Chandler asked a few more pertinent questions and then said, "I'll be there."

He was as good as his word. There were present at the meeting representatives of not more than fifteen cheese factories from different parts of the state, but at that meeting an agreement was entered into which placed Wisconsin cheese on a competitive basis on the Atlantic seaboard.

AN INTERNATIONAL MARKET

The production of cheese in Wisconsin took a wonderful jump. Within ten years, more than five hundred cheese factories were added to the list, and thousands of farmers bought cattle and turned their attention to dairying. Through the personal efforts of Mr. Hoard, the shipping facilities were further improved and trade relations were effected with London, Liverpool, Glasgow, Manchester, and Bristol. The young New York cheese maker's dream was beginning to be realized.

From then on the dairying industry advanced rapidly in Wisconsin. In 1876, at the Centennial Exposition at Philadelphia, Wisconsin cheese took the prize over the entire country. In 1878, at the International Dairy Show, held at the

American Institute in New York City, where dairy products were brought together in competition from all parts of the world, a Wisconsin girl, Fanny Morley, of Baraboo, won the international grand prize for butter.

In the early '80's, after the Wisconsin farmers had demonstrated their ability to produce cheese, the first effort was made in the creamery production of butter at Beloit. An enterprising produce dealer persuaded a number of farmers to churn butter and sell it to him unsalted, allowing him to salt, work, pack, and ship it uniformly. This business proved successful, and the farmers were quick to grasp its significance. They saw that the cheese factory system might be applied with equal success to butter making, with the additional advantage that the by-product of skim milk was of much greater value than the whey from cheese, as a food for calves, pigs, poultry, and other young stock. Thus the creamery came into vogue in Wisconsin thirty years ago, and it has grown very steadily and substantially ever since.

Meanwhile, the propagation of dairy knowledge was being steadily carried on by the association. They held conventions frequently in various parts of the state, where large numbers of farmers gathered and listened for three days to discussions by the best experts available in all branches of dairying. This was the father of the Farmers' Institutes, which have since spread to all parts of the country; and much of the extension work and other elements of the Western agricultural colleges had their origin in the methods of the Wisconsin Dairymen's Association.

This body of men, in fact, had a truly remarkable influence on the industrial and agricultural development of the state. Since 1872 they have held together, active and progressive, actuated by a single purpose, and avoiding all bickering and politics. The present state of Wisconsin stands as the fruit of this blossoming. The annual dairy product of the state now exceeds one hundred million dollars, and it has become the largest cheese and butter producing state in the Union, not excepting New York, though only one half of its territory is as yet in the hands of the husbandman.

Mr. Hoard's connection with this great movement was constant and vital. In 1885 he found it impossible to treat adequately of dairying in his little country paper, so he started *Hoard's Dairyman*, at first a modest sheet of four pages. Through the columns of this journal he continued to preach his agricultural doctrines, and with the spread of his ideas came growth and prosperity to his publication. It now has a circulation of 70,000, including subscribers in Europe, India, Japan, and South Africa, and is recognized as the world's leader in dairy thought.

A DAIRYMAN GOVERNOR

In 1888 Mr. Hoard, then probably the best known man in Wisconsin, was elected Governor of the state.

Five years ago he was appointed a member of the State Board of Regents, and was elected president of the Board. For four years he served in this capacity, devoting much of his time and attention to the development of the Agricultural College at Madison, until his failing health forced him to resign in 1911. Up to the present time Mr. Hoard has been able to remain actively at the head of his paper and to pay attention to his farm, though his seventy-six years admonish him to relinquish work.

His farm is carried on with his publishing business. Its 253 acres are devoted to the breeding of pure-bred Guernseys the growing of alfalfa, in which Ex-governor Hoard was a pioneer twenty years go, and the study of problems of soil fertility. It is conducted as an adjunct to the paper. But Hoard's Dairy Farm is more than an adjunct; it is a demonstration of what can be done by intelligent methods on run-down soil, and it is an interesting story in itself.

This farm, like most of Southern Wisconsin, was originally rich in natural plant food and produced wheat in abundance. But its owners abused it. For twenty-five years they planted wheat, and yet more wheat, on the same soil, until they robbed it of its fertility.

Believing in soil fertility as the bedrock

of agricultural prosperity, and with faith in his ability to return that fertility to these worn-out acres, Ex-governor Hoard bought the farm fifteen years ago and started his systems of fertilizing, rotation, and deep plowing, with the result that practically every acre of his farm is able to produce twice as much to-day as it could fifteen years ago, proving that it is not impossible to make a farm produce remuneratively and to increase the soil's productive power at the same time.

With barnyard manure — one of the dairyman's most valuable by-products — as his chief source of fertility, Mr. Hoard has also used since the beginning two carloads of Tennessee raw phosphate, three carloads of ground limestone and marble, and a considerable quantity of muriate of potash.

His rotation scheme involves a five-year period — three years of alfalfa, one year of corn, and one year of barley, re-seeding to alfalfa. This scheme keeps the lands fertile and the silos full.

Deep plowing has been practised with tremendous success. With a deep-tilling machine (not a sub-soiler), he plowed last spring a plot of fifteen acres twelve inches deep, turning up, as he expressed it, a new farm. He sowed barley here — only three pecks to the acre — and as a result of the deep plowing secured the finest stand ever seen in that part of the state.

Besides these crops, he reserves ample pasturage for his big herd of Guernseys.

THE REAL MEANING OF COWS

"The dairy business," said Governor Hoard, as he and I drove out to his farm, "means a good deal more than merely producing millions of dollars' worth of butter and cheese. It means a higher average of general prosperity and better social conditions. Wisconsin has not yet become so completely a dairy region as Denmark, but Wisconsin farmers are adopting many of the Danish ideas, especially along coöperative lines. The coöperative creameries and cheese factories are the backbone of Wisconsin's dairy industry, and the coöperative cow-testing associations make it possible for every farmer to tell just what each cow earns and to weed out the 'star boarders.' By 'star boarders' I mean cows that do not pay for their keep. Each of these cow-testing associations maintains an expert whose business it is to apply the Babcock test to the milk of every cow owned by each member, for a number of consecutive days every year, in order to determine the proportion of butter-fat produced by each individual cow. Before the days of the Babcock test this was impossible. Professor Babcock's invention is Wisconsin's greatest contribution to the dairy interests of the world. The whole world had been looking for some simple, practical method of determining the quality of milk, when Professor Babcock found that the addition of a small amount of sulphuric acid would separate all the fat, making it easy to determine the exact percentage. It has made the dairy farmer more honest than the Ten Commandments ever did.

"As a result of the introduction of the Babcock test, the dairy herds of Wisconsin have been rapidly graded up, through the introduction of pure-bred sires and the importation of pure-bred cows of the best dairy breeds, until the average is probably as high in actual wealth-producing capacity per cow as anywhere in the world. In Waukesha County there are more pure-bred Guernsey cows than there are on the whole Island of Guernsey. The farmer who formerly could not be convinced that a $40 scrub cow was not as good as a $100 grade cow, or a $200 pure-bred, is now getting rid of the scrubs and buying pure-breds as fast as he can afford them.

"It has been a hard tug," said Mr. Hoard, "but it has paid. Such a result could not have been accomplished without effort. The farmer is an intellectually conservative creature; he is slow to learn. Often it has seemed like trying to pull a cat by the tail toward a saucer of cream. She will dig her claws into the carpet and contest every inch of the way, but if you can get her to the cream she will gobble it up, and ten to one she will attribute its acquisition to her own vigorous efforts. Still," and there was something more than a mere twinkle in his eyes, "it doesn't matter much after all, so long as the cat gets the cream."

ADDISON BROADHURST, MASTER MERCHANT

BY

EDWARD MOTT WOOLLEY

[In five chapters of fiction, of which this is the first, Mr. Woolley has sketched the business career of a great merchant in such a way that the foundation principles of his success are revealed. Many of the events of the story are actual experiences of living men, but Addison Broadhurst is a creature of the imagination as well as a composite picture. — THE EDITOR.]

I HAVE long had in mind the project of writing the true history of my business success. This purpose I have resolved at last to fulfil. For ten years I have delayed it because the affairs of my business have pressed heavily. They are crowding me to-day more relentlessly than ever, but I shall not longer postpone a duty that I believe I owe to other men. My business education has been acquired at the cost of untold labor and of mistakes that reduced me at times to the verge of despair. Through failure I have worked my way to a large success, and I want no greater monument than to leave this record for the guidance of men who are blundering through business careers.

Since I mean to be absolutely truthful, I claim the protection of a nom de plume, and I shall call myself Addison Broadhurst. I was born in a town of two thousand people, which for convenience I may call New Harland, located four hundred miles from the city of New York. My father was editor and ostensibly the owner of a weekly newspaper, though as a matter of fact it was practically owned by creditors. During my father's lifetime I cannot remember any period of relief from debt. My earliest lessons in home-reading were dunning letters and long, itemized statements of accounts. My father's ambition was to pay off his creditors and get square with the world.

This ambition was never realized, for when pneumonia carried him off in my fourteenth year he owed $4,852.96 — more than he ever had owed before. I give you the exact figures because I have them before me as I dictate. I am proud to say that in after years I paid these debts myself, with interest.

It was a bitter time for us, however, when my father died. I was the eldest of four children — three of them girls. There was a little life insurance, and father's lodge took care of the funeral, but within a few weeks we found ourselves penniless. I quit school and secured employment in Feehan & Son's grocery at $2.50 a week, while my mother — a refined gentlewoman — took in sewing.

The store of Feehan & Son was one of those nondescript places, lacking in appeal and individuality, such as one sees everywhere in the realms of small business. It was unpardonably commonplace — the fault of the average store that falls short of success. Its mediocrity was due chiefly to ignorance, and soon brought about the collapse of the undertaking. I had worked for the Feehans a year when they failed.

My mother's death about this time was a distressing event that I should omit here were it not necessary as a vital incident in my story. It was now impossible for me to maintain a home for my sisters; they were taken, all three of them, by a home-finding society. Margaret, twelve years old, was placed in a family in town; Jean, three years younger, was sent to a neighboring farm; baby Bess, scarcely four, was adopted by a couple who took her to Alabama. I pass over the grief of the separation.

I spent that summer as a laborer on a farm, returning late in the fall to my

native town, where, after holding several jobs, I obtained a clerkship in the clothing store of Smalt Brothers.

Nead Smalt, the elder of the brothers, was a cunning but ignorant man whose code of business ethics was hampered by few of the considerations that actuate the modern merchant. Since not many of his customers could tell the difference between cotton and wool in garments, he committed a perpetual fraud. If called to account occasionally, he could lie with the slippery tongue of an Ananias, while his wife, who spent much of her time in the store, was a Sapphira in the devious art of misstatement. Once a week our local newspaper printed a display advertisement written by Nead Smalt; and I, who knew just how much the truth was outraged, was forced to uphold the deceit. My training had indicated methods of this sort to be legitimate business. And I had seen enough hardship so that I clung tenaciously to my wage of $4 a week.

Sam Smalt, the younger, was a vicious, brutal man, lacking in the sly craft of his brother, but more aggressive. He often insulted customers openly and thus surrounded the business with many bitter enemies. Except for the pacific though hypocritical influence of Nead, the store must have closed long before it did.

When I had worked for Smalt Brothers two years, criminal action was taken against Nead and Sam for obtaining goods on false representations. On the day the store closed I was put on the grill by the attorney sent there by Smalt Brothers' creditors, and for an hour he tried to bulldoze me into telling what I knew. In the little back room of the store he threatened me, but through it all I stubbornly refused to talk. However, it looked as if I must either line up with the Smalts and uphold them in all the crooked things they had done, or else ally myself with this bully who had shaken his fist in my face for sixty terrifying minutes.

That night, after I had gone to bed, I resolved to do neither. I hated the Smalt brothers for their abuse, for the wretched wage they had paid me, and for the lies they had made me tell for them. But I hated this jobbing house and its lawyer quite as much, not only because they had sought to drag me into an affair in which I was innocent, but because I knew that the selling methods of Smalt Brothers had been winked at — even laughed at — until the Smalts turned the tables.

I crept out of bed at midnight. At first I packed an old handbag with my meager possessions, but upon reflection I decided not to take it. I had only one suit of clothes, anyway, and the apparel I left behind was scarcely more than rags. From my little old trunk I took my savings, which, if I remember correctly, were about $48. Out of this I owed nearly a week's board, so I put $3 on the bureau to cover that debt — the only debt I owed.

Nobody except myself knew what that balance of $45 had meant to me in toil and self-deprivation. I had saved it out of a slender surplus after paying for my keep and giving money to my two sisters who were living near me. Both these sisters had been unfortunate in the character of the homes in which they had been placed. Margaret was being used chiefly as a servant, and Jean's foster-mother was strict with her to the point of cruelty. Of little Bess, I knew nothing.

You may imagine, then, the distress that racked me at the thought of going away and leaving Margaret and Jean altogether. And yet these sweet sisters of mine were in reality a powerful element in my decision to go. I well remember how I took a silent vow that night to succeed, no matter what obstacles stood in my way, so that I might come back and demand the release of both girls — and of the lost Bessie as well.

Very softly I tiptoed downstairs, stopping now and then to listen for the heavy breathing of my poor old landlady, who, I knew, would sadly miss the stipend she had received so long from me. I let myself out the back way, and then cut across a vacant lot to a side street. I wished to avoid the hotel where the city lawyer was staying. Through the bare trees I could see a light in the hostelry office. It quickened my impulse as I walked as quietly as possible toward the railroad station.

I had never been in New York, and I shall not attempt to express here the emotions that gripped me when I stood outside the iron fence of Trinity graveyard, or paused before the oval of Bowling Green, or gazed away over the Bay from the Battery. The days of which I had read and dreamed were gone, and New York was a hard, uncompromising reality.

For three weeks I hunted for work; and then, with my money exhausted and my courage all but gone, I began to see, faintly, an underlying philosophical fact which became, ultimately, the wedge that I used in many phases of my later success. It was simply this: that when a man sets out to accomplish a given end he is not likely to succeed if he merely throws himself bodily against the obstructions that rise in his way; he must find a vulnerable spot and get through by strategic manœuvres.

I have known many men who battered recklessly upon the door of attainment — battered for a whole lifetime without ever breaking one of the panels. I have seen them kick with heel and toe, and hammer with both fists, and shout themselves hoarse; and then at the end they have gone away old and exhausted. Other men — ah, I have known thousands of them — have simply rapped on the door softly, whispered the countersign, and walked in. The men who do things in this world with their muscles alone do not get across the threshold of big results.

There was a grocery store on Chrystie Street where I had applied unsuccessfully for work, and now I went back there. "I should like to go out and canvass for you," I said to John Remmel, the proprietor. "I am sure that among all the people around here I can sell a lot of goods. I'll work on a commission at first; you needn't pay me a cent until I demonstrate that I'm worth hiring."

Here, you see, was a proposition that set me apart from the average man who came looking for work; so the door opened just an inch or two and I got my foot through.

For a month I traveled labyrinths of streets; and I was fast demonstrating the value of my plan, when a fire cleaned out the grocery and put an end to our promising scheme. There had been no real purpose behind it, so the accident of the conflagration was sufficient to give it quietus. Remmel discharged me, and even after rebuilding he never resumed the canvassing campaign. He went out of business a few years later.

About a week after the grocery fire I was walking on Fourteenth Street when I witnessed an accident in which a young man was run down by a delivery wagon and badly injured. I stood by while he gave his version of the affair to a policeman. He was a clerk, he said, in Flanders' shoe store on Fourteenth Street.

I went straight to Flanders' and offered myself as a substitute. I got the place — by seizing an opportunity the moment it presented itself.

While I worked at Flanders' I used to stand in the door during idle hours and watch the people go by. Every person who passed Flanders' store had on shoes; but I wondered why more of them didn't come to Flanders' to buy?

But to Flanders it was a part of the natural order of things that the procession out on the sidewalk should keep on marching by without coming in.

At the end of six weeks the clerk whose place I had taken came back and I lost my job. I might add that Flanders was closed out for debt subsequently.

My next job was in a hide and fur warehouse on South Street. A ghastly place it was. Even the office was permeated by the vile odors from the store-rooms above and below. My task was down in the basement, tallying the hides. The cavernous reaches of that cellar filled me with a vague horror when first I gazed into them.

I discovered, however, that the cellar itself was more bearable than the company of the men with whom I worked. The foreman, especially, was a brutal, vulgar man whose very presence sickened me. Yet for three long months I stuck to it because I was obsessed by a sense of duty. In my nature was a dogged persistence that now got hold of me grimly and kept me there.

But one day the foreman let loose upon me such a flood of insult, because of some slight dereliction of duty, that my fighting spirit took a turn astonishing not only him but myself. Seizing a slimy skin in both hands, I wiped him across the face with it. Then, dropping the hide on my tally-book, which lay face downward on the floor, I got out of the establishment and never went back.

Now here is the point I want to emphasize: There are some things in which persistence doesn't count; there are some things men do not need to endure. I have found that I always gained by withdrawing as quickly as possible from a path that did not lead to self-respect and better things.

On the day following my unceremonious departure from my South Street job, I applied, along with perhaps a hundred other young men, for a place in Lombard & Hapgood's department store (I am using fictitious names, remember). I went there in answer to an advertisement in the papers for six stock-clerks.

The whole lot of us were kept waiting for an hour in a little room off the shoe department on the fourth floor, and I had a chance to watch the crowds of shoppers that congested the shoe counters. I had never seen such an amazing jam of customers in a shoe store; no rush period at Flanders' had ever approached it. I could not reconcile the situation. It was hard to understand why so many people should come to this department store to buy their shoes, and so few to Flanders' establishment. The two stores were not half a dozen blocks apart, and, judged from the standpoint of convenience, Flanders' had the advantage. His store was on the ground floor, immediately accessible from the street, while this shoe department was four stories up, and could be reached only by a tortuous course through other crowded departments.

However, there was one thing that struck me as self-evident about this shoe section in Lombard & Hapgood's store: It was not arranged with a view to serving the customers as promptly as they might have been served. On this score, Flanders was far in the lead, despite his small clientele. As I stood watching the impatient, pushing mass of people, I fell to speculating on the way Flanders would have done it.

Finally the inner door opened and the applicants for work were admitted half a dozen at a time. I was among one of the last lots to go in. A heavy-set man of middle age sat at a roller-top desk back of a railing, and now he beckoned to six of us to come up alongside. Four of the earlier applicants sat on a bench nearby; all the others who had come in ahead of me had disappeared.

"Name?" asked the executive at the desk, of the first of the six. Then, in quick succession, scarcely pausing to digest the replies, he went on: "Age?" "Experience?" "Education?" "Live at home?" and so on. Almost as quickly, he gave his verdict to each of the five who preceded me to his desk: "Not qualified; you may go."

Now some people learn from observation; others do not. I could name a hundred men of my acquaintance who have tried repeatedly to get jobs they wanted, only to be told, in substance: "Not qualified; you may go." Yet they have never taken the hint and qualified themselves. In my own business to-day I see a continual stream of boys and men passing through the quick fire of questions in my employment department — and then marching out. To me, it has never ceased to be a depressing spectacle, because I know that my store has held wonderful potential opportunities for many of these men and boys.

Some faint realization of all this, I repeat, had dawned on me. "I have not had any experience as a stock-clerk," I confessed, when the question was put to me. "But," I added, quickly, not giving the man a chance to get ahead of me, "I think I could be of service in the shoe department, sir."

"The shoe department is amply supplied," he returned, shortly. And then, as if something in my suggestion had aroused his interest, he asked: "What service could you do the shoe department if you were there?"

"I think I could arrange some of the counters so the people could be waited

on faster," I answered. "The congestion out there is very bad this morning, sir."

"What would you do," he asked, "to relieve the congestion?"

"I would have a row of small counters, instead of that long one at the farther side," I told him. "I think I'd make them round, like a table with the middle cut out. Then I'd sort out the shoe sizes and put one or two sizes on a counter, instead of heaping so many together. Then if you changed the aisles ——"

"You may take a seat over there on the bench," he broke in. "I'd like to talk to you later on."

Well, he did talk to me, and afterward he took me to the manager of the shoe department, to whom I repeated my formula for quickening the selling procedure. My plan was somewhat crude, but it held the germ of something worth while, and it established me as a floorwalker in Lombard & Hapgood's shoe department.

The period on which I now entered seemed to be hedged about with a peculiar charm that caused me to go up very fast. This was due, I believe, to two causes. In the first place, I had begun to analyze the elements of success — a mental process which many men never undertake. In the second place, I had come upon Lombard & Hapgood's stage with the spotlight turned full upon me from the wings.

By the spotlight I mean the personal observation of Mr. Phelps Lombard himself — the head of the firm. On the day that I began my service he had been called on to sanction or veto my plan for rearranging the shoe department. He had sanctioned it, after careful study; and, naturally enough, he took a great interest in me thereafter.

"A young man who has the brains and initiative to think out an improvement," he said to me, "is worth having. We will advance you as fast as you deserve."

I did not stay long in the shoe department, but was transferred, on the personal order of Phelps Lombard, to the house furnishings. Mr. Lombard had been so much impressed with the benefits I had wrought in the shoes that he wanted me to try my hand in this other department. At the time of this transfer my salary was raised from $15 to $18 a week.

The manager of this department chanced to be in Europe at the time, and my immediate superior was a young fellow named Hessey, head of stock. He was very precise and orderly, but wanted no innovations, and he hated me from the start. Lombard had sent me down there as a clerk, but with orders to see what improvements I could suggest. The first thing I did suggest was the separation of two counters that stood end to end, in order to open a public passageway between. One day while Hessey was at lunch I accomplished this myself.

Hessey was furious when he returned, and immediately had the counters set back. For three weeks I kept making reports on possible improvements and Hessey opposed them all. Then one day Lombard came down to the basement and incontinently fired Hessey on the spot.

I have always found that men who build high fences of wisdom around themselves and refuse to let other chaps with ideas get inside are the ones who stay in the inclosure of mediocrity all their lives.

It wasn't long before I began to be known in the store as "the system bug." I had embarked on the career of a specialist. My specialty was moving counters and shelves and stock, and doing things of that sort, so as to quicken the operations of the store and reduce expense. It was because I stuck to this line of effort that I kept going up. It was because I worked that I got results. This statement, I know, sounds like a platitude, so I want to tell you one instance that will mean something concrete.

I had been sent by Mr. Lombard to the books and stationery to boil that department down to three quarters of the space it occupied. The task was a complicated one, involving a complete reclassification of stock. As I proceeded with this preliminary work, it got hold of me by degrees until I could scarcely think of anything else.

One night I quit work when the store closed, and went to dinner. I was in the habit of eating in restaurants here and there, as my inclinations moved me. Now I dropped in at a small café near the

store, where I chanced to find several young fellows who belonged to the Lombard & Hapgood organization. They were going to the theatre that night, and they suggested that I go along.

Now there were times when I enjoyed a show as much as anybody, but just then the very thought of one was repugnant. I had a show of my own going on in my head. It possessed a full plot, with plenty of dramatic incident and a lot of scenery that was shifting continually. Its story was laid in the books and stationery department.

"Oh, wake up and quit moping!" advised one of my friends, a young man named Talbot. "What's the matter with you, Broadhurst? You're getting to be a regular clam. Come along to the show."

Talbot was a floorwalker in the white goods, a job he had held several years. He dressed handsomely and knew a lot of the best customers by name, but he was one of those men who stay in one job a long time despite their creased trousers and pink silk neckties. A man can be a floorwalker, you know, and never be worth more than $15 a week to a business.

"Thanks," said I; "but I mean to work to-night in my room."

"Oh, let's not talk about work!" exclaimed a chap named George Day, who clerked in the rugs. "We rang up our time when we left the store. I don't want to think of work until eight o'clock tomorrow morning. Cut it out!"

"I'm much obliged," I returned; "but I think I'll cut out the show instead."

It was midnight when I finished my classifications. I was deadly tired, and I went to bed and to sleep at once. But at one o'clock I awoke, with the whole drama of the books and stationery running through my head again. I couldn't get rid of it, so in half an hour I got up, dressed, and went out.

New York never sleeps, you know, and over on Sixth Avenue I found things even lively. There was a crowd of young men coming up the street arm in arm, singing, and one of them I recognized as George Day. It is a curious study to watch the night life of a city — and if you've seen much of the world you won't need a guide with a megaphone to point out the chaps who'll never be members of the firm.

I walked down Sixth Avenue to Lombard & Hapgood's and around to a side entrance, where a watchman admitted me. I well remember how the books and stationery section loomed vague and shadowy in the deep gloom of the store. The electric light current was off, and only stray rays filtered in from the arc lights of Sixth Avenue. The whole place was ghostly in its white cotton shrouds. But the watchman got me a lantern and stood by, wondering, as I paced off the spaces, and measured, and marked broad chalk-lines on the floor.

I was still there when dawn came out of the Atlantic Ocean and opened up the everlasting new problems for this mighty city of opportunity. But for me this particular dawn found a problem solved. The night has opportunities as well as the day.

Talbot is still a floorwalker in New York. I see him occasionally, and I pity his gray hair and lean, mournful face. I don't know what has become of George Day — poor chap! The last time I saw him he was barking for a red-fronted freak museum on the Bowery. He was down and out, he told me, and he asked for a dime. Probably by this time they have got him on the desert island up the Sound. You know the city owns that dreadful island, and hires a gang of ghoulish laborers to stay up there and dig trenches for the human derelicts who are brought up in boxes from New York.

It is easy to ring up your time, as Day did, and then forget your work until you ring in again next morning; but if I had done that I'm sure I'd never have got a desk in the room next to Lombard's, with "Superintendent" in goldleaf on my door.

It was work and results that wrote this gold tracing on the door of my private office five years after I went to New York. And then two years later something happened that began a new and very different epoch in my career. I should like to omit portions of it, but I shall try to hold myself to my purpose.

The whole trouble lay in the fact that I had been climbing a flight of circular stairs.

THE MARCH OF THE CITIES

HOW NEW YORK PROVED THAT IT IS A CITY AND NOT MERELY A PLACE

NEW YORK has discovered its civic pride.

Most people didn't know it had any. Most New Yorkers, for instance, were perfectly sure it hadn't.

"New York isn't really a city," was the way they expressed it. "It's just a place on the map, occupied by four million people of different races and different interests, all trying to get enough money quick to live on somewhere else."

That was the ordinary, if somewhat cynical, view of New York by New Yorkers and observers from outside alike. And it seemed to be as true as generalizations usually are.

Of course, there were exceptions. Here and there were little groups of people who *were* trying to do something for the good of the town and were accomplishing something. These and half a dozen more organizations that represented some special interests were, in fact, getting results little short of wonderful, when their limited resources are considered.

But nobody knew it.

That was the trouble — there was no community spirit.

The newspapers didn't help. If they printed anything at all about what the Merchants' Association was doing, which most of them did not, it was usually some formal statement or committee report and was placed back in the section of the paper devoted to the news of the stock exchange and the real estate market — a section which, contrary to the prevailing impression, is not the part of the paper every New Yorker turns to eagerly before he opens his eggs at breakfast.

It wasn't the newspapers' fault. They, too, suffered under the delusion that New York had no community spirit — that its populace was interested only in the ticker and the criminal courts, the stage and the Great White Way. And the populace, reading little and hearing less about the things the commercial organizations were doing, fell into the habit of thinking that nobody was doing anything and comforted itself with the thought that New York probably didn't need any "boosting" anyhow, but would continue to forge ahead through its own momentum and remain the Metropolis of the New World, whether they did anything or not.

The men who were trying to do something knew better. They were alive to Boston's efforts, backed by its Chamber of Commerce, 4,000 strong, to make that ancient city a more formidable rival of New York. They knew how Chicago's Association of Commerce was creating conditions that led great industrial enterprises to choose their city rather than New York for their factories. They saw clearly the need of doing for New York such service as the community organizations of San Francisco and Denver, Buffalo and Detroit, New Orleans and Jacksonville, are doing for their towns. But such work takes money, and the only way commercial organizations can get money — regular incomes, at least — is through membership dues. And the Merchants' Association, the largest of all the New York organizations, had only 1,500 members!

If it had only half as many members in proportion to population as Boston's organization had, there would be 16,000 instead of 1,500. Recruited to the proportionate strength of San Francisco's Chamber of Commerce, it would have 48,000; of Denver's, on the same scale, it would have 79,000 members.

Public-spirited citizens themselves, the directors of the Merchants' Association had more faith in the civic spirit of New York and New Yorkers than most of their townsmen had. They decided to go ahead and begin the additional work that needed to be done and, in some way or other, they were sure they could get enough additional income to sustain the Traffic Bureau, the Convention Bureau, the

Publicity Bureau, and the Foreign Trade Department which they had decided were needed. A few of the directors and their friends under-wrote the added expenses, and the new activities were undertaken early in 1912.

Then came the question of getting enough new members to provide for the added expenses, and it was decided to go after them in just the same way that the commercial organizations in St. Paul and Wichita and Cincinnati and scores of smaller cities had gone after them, and get them — by a "whirlwind campaign" and an appeal to civic pride.

A good many people smiled broadly when they heard of the project.

"You'll get nowhere in New York that way," said they. "New York is different. There isn't any civic spirit here."

Among those who didn't take any stock in this notion were the young men at the head of Town Development Company, Lewis D. Sampson and Will L. Finch, and their staff. They had been called in by the Merchants' Association to plan and carry out the membership campaign. They had succeeded in St. Paul, and they had had similar experiences in many larger and smaller cities. So when cynical friends warned them that they couldn't do anything in New York, they smiled and remarked that that was just what they had been told in every city they had visited.

They studied New York and its conditions and especially its people for a good many weeks, and then planned the Merchants' Association campaign for new members. The first thing necessary was to arouse the New York public to a sense of the necessity for organized, coöperative effort for the good of the town. They had been told they could not expect any support from the newspapers. Yet the New York newspapers came to the front unanimously and more effectively than had been the case in any other city.

People began to take notice that New York was in danger. Business men whose names carried weight began to write letters to the papers and to their friends about the situation. Still there were those who doubted that New York business men would, when it came to the pinch, give their time and personal services to an actual canvass for members.

The test came on the evening of November 14th, when nearly four hundred of the city's most influential men attended a banquet given by the Association at the Hotel Astor. And after Mr. Harry A. Wheeler, President of the Chamber of Commerce of the United States of America, had warned them solemnly and eloquently of the efforts other cities were making to divert the business of New York to other points, volunteers were called for to go out in person and invite business men to join the Merchants' Association.

Nearly three hundred responded.

These three hundred, including the actual heads of many of New York's largest commercial, industrial, and financial institutions, went out on the streets for four days, two hours a day, and gathered in members for an organization which many of them had only vaguely heard of a few weeks before.

They met every noon at Delmonico's down-town restaurant to report the results of their morning's work and displayed more enthusiasm than the business men of the "live" western towns had shown. The newspapers saw the event as news and printed daily columns about it. The campaign became the principal topic of discussion wherever business men met. The new members came. As this is written they are still coming. The directors of the Merchants' Association had thought they would be doing well if they doubled their membership. They have done that, and more.

But most important of all, they have revealed to New York and New Yorkers that there is civic pride in the big town — that its business men are not the self-centred, unpatriotic individuals they had been thought to be, but are "folks," just like the business men of other towns. If there is any difference, it would seem to an outsider that New Yorkers have shown themselves a little more easily aroused by appeals to their civic spirit, and New York newspapers a little more enthusiastic for the common welfare.

FORWARD TO THE LAND

KEEPING THE BOYS ON THE FARM

THERE is a farmer in Southern Georgia whose neighbors all consider him an unusually successful man. He has farmed all his life, but until five years ago he had merely made a fair living in return for long hours and ceaseless work. His career was not such as to tempt the younger members of the family to stay on the farm. The one who told this story, in fact, left the country and went to New York.

Five years ago the older man's health gave out. He was laid up all winter and when spring came on he could get around a little but he could no longer work with his own hands. His neighbors all said, "It's too bad he's all wore out," and some of them even added, "laid by to die."

He gave up half the farm and hired help to work the remainder, under his supervision. Watching the Negro work was not interesting employment for all his time and so he attended crop improvement meetings, began to get in touch with the state and national agricultural experts. While his hired Negro was working with his hands, the "worn out" farmer got to work with his head, and what he thought out the Negro carried out under his direction. Now there are two or three Negroes, though the farm is not as large as it used to be when he worked it himself. The profits, on the other hand, are three or four times what they used to be — and the younger member of the family who told this story is now in Georgia swapping some town lots for a farm, though he has a two-year contract which he has to fulfil before he can go to it permanently.

A well known fruit raiser in New Jersey tells this story of his success:

"At twenty-one I rented the old homestead. I tried to buy it, but father said no. It was too big a thing, more than I would ever be able to pay for. No one member of his family need ever hope to own it. As I could not buy the one I lived on, I bought an old neglected fruit farm, seven miles from home, and farmed it in addition to my home farm. The fourth year our apples averaged 40 cents a basket and the farm sales were more than $6,000. All this time, the farm I lived on was also doing a little better every year so that I once more had some free money. By this time father had forgotten that no one of his sons could ever pay for the whole of the farm and he sold it all to me. After making a settlement for the home farm (largely paper) I still had a little money left and I bought another farm right away. The sales of the farm the first year were $4,100, the third year they were $5,100, and last year (the twelfth) they were about $10,000 clear of commission. The other farms I have tackled have given me similar results.

"My wife goes around with me to these farms and is just as much interested as I am. My older boys are as enthusiastic as any farmers you ever saw. The oldest one is at Cornell studying agriculture. The next two will be somewhere studying agriculture next year. They are more enthusiastic than their father, and when they come back we will do still better. I have got a little red-headed boy at home so high. He wishes he could hurry up and grow big and learn how to farm.

"Farmers are prosperous. They have automobiles, they have steam-heated houses, and live as well as anybody. Sentiment is all right, but sentiment won't hold boys on the farm. But let me tell you, if you make your boys think that a farmer can make more money, have more fun, lay by a better competence for old age than any other line, you will put those boys in a state of mind that you cannot drive them off the farm with a club."

ANSWERS TO QUESTIONS ABOUT FARM LANDS

61.—*Q.* What is the approximate value of land in Lawrence County, Illinois; to what are the clay hills in the central and western parts adapted; and what could I afford to pay for a farm there in order to make a fair living?

A. In 1910 the average value was $63.56 per acre — 141 per cent. higher than in 1900. The chief crops in order of acreage are corn, wheat, and forage grasses, but until improved by careful, scientific treatment, the clay soils are not adapted to the profitable production of any of these crops. Their market value ranges between $25 and $75 an acre, exclusive of mineral and oil rights.

What you could afford to pay for a farm there or elsewhere would depend on how good a farmer you are and what you plan to do with the land.

62.—*Q.* Will you please tell me about the land, crops, and farming in Amherst County, Virginia; why does it seem to rain so rarely and why do not animals thrive there?

A. Through a local representative of the United States Department of Agriculture we learn that the clay soils of Amherst County produce fine grass, cattle, and, in certain sections, fruit. These soils have been overworked and underfed until in many cases they are in very poor condition. However, proper care will enable many of them again to produce fifty to one hundred bushels of corn and three or four tons of grass to the acre.

For the last two years this section of Virginia has suffered the most severe droughts in twenty years. Why this is so we cannot say, but it probably accounts for the scarcity of rain which you have noticed. Serious effects can usually be avoided by deep plowing and by the maintenance of a deep seed bed and a soil mulch. We can locate no facts bearing out your statement that stock does not thrive there. Excellent cattle and horses are being raised in Amherst and surrounding counties.

63.—*Q.* Do you consider the purchase of land in Meade County, Kansas, a good investment?

A. Without knowing the cost and the exact location of the land it would be foolish to give a definite answer. The county receives on the average twenty-one inches of rain, but crop failures because of drought are on record. The range of temperature between 113 and -24 degrees supplies some rather severe extremes.

Of the two main soil types, the Richfield silt loam is well adapted to wheat growing but calls for very careful management. The Clark stony loam, with which is mixed considerable gravel, is chiefly used for pasturing. We hardly anticipate any great boom in Meade County land and if you are being influenced by promises of large profits and quick returns we advise you to use a great deal of caution.

64.—*Q.* Can you refer me to reliable sources of information about irrigated land in Colorado and New Mexico?

A. There are in these states lands irrigated by Government projects and Carey Act developments, and also school, state, railroad, and private lands, some of which are irrigable. Mr. C. J. Blanchard, of the United States Reclamation Service at Washington, D. C., can inform you as to the National projects and local water users' associations can give you further facts; the secretaries of the state boards of immigration at Denver, Col., and Albuquerque, N. M., can tell you about state and school lands; and the agricultural commissioners of railroads passing through the territory, about lands along their lines. Property under private ownership can ordinarily be located only through agents and advertisements.

65.—*Q.* Can land be obtained cheap or through homestead claims around Mosier, Ore.? What is the type of soil there?

A. There are about 260,000 acres of homestead land still open in Wasco County in the north of which Mosier is situated. Information as to its exact location can be obtained from the Land Office at The Dalles, Ore., but its nature and desirability can be learned only by a personal examination which is required of entrymen. There is also considerable school land offered by the state at not less than $7.50 per acre, and about that the state land agent at Salem can advise you.

The soils of the Mosier, Hood River, and other valleys are chiefly derived from basaltic rock and volcanic ash and when irrigated are very fertile. Along the rivers there are areas of sandy loam and of heavier, more silty formations. Around The Dalles conditions are said to be good for winter wheat raising, but apples will probably thrive on any of the uplands if water is supplied to supplement the rainfall, which averages sixteen inches a year.